THE REFINER AND NATURAL GASOLINE MANUFACTURER

In This Issue

Buyers Guide for all Refinery and Natural Gasoline Plant Equipment

Traffic Matters to Thousand Junction at N. P. A. Gathering

Is Gravity Still the Basis of Crude Value? By George Reid

Design and Operation of Heat Exchangers (Second Part) By F. J. Kallam and A. F. Semple

Many other Interesting Features

THE JOHN CRERAR LIBRARY APR 22 1925

Vol. 5 No. 4 APRIL 1925 $1.00 Per Year

FOR INSULATING

TOPPING UNITS
VAPOR LINES
CRUDE STILLS
FOREWARMERS
DEPHLEGMATING TOWERS
RE-RUN STILLS
SUPERHEATERS
STEAM STILLS
HEAT EXCHANGERS
BOILERS
ECONOMIZERS
BREECHINGS

USE SIL-O-CEL

SAVE HEAT

THE FUEL YOU SAVE by insulating heated equipment against radiation losses amounts in some cases to more than *twenty per cent as much as your consumption.* In practically every instance the direct savings from this source more than repay the entire cost of the insulation within the first year of service.

Insulation also *improves temperature control, increases output capacity* and *prolongs the life of the refractory.* Its specific advantages on individual types of equipment are discussed in detail in our complete handbook on refinery insulation. If this book is not already in your files we will be glad to send you a copy if you will write for it on your business letterhead.

CELITE PRODUCTS COMPANY

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FOR INSULATING

WASTE HEAT FLUES
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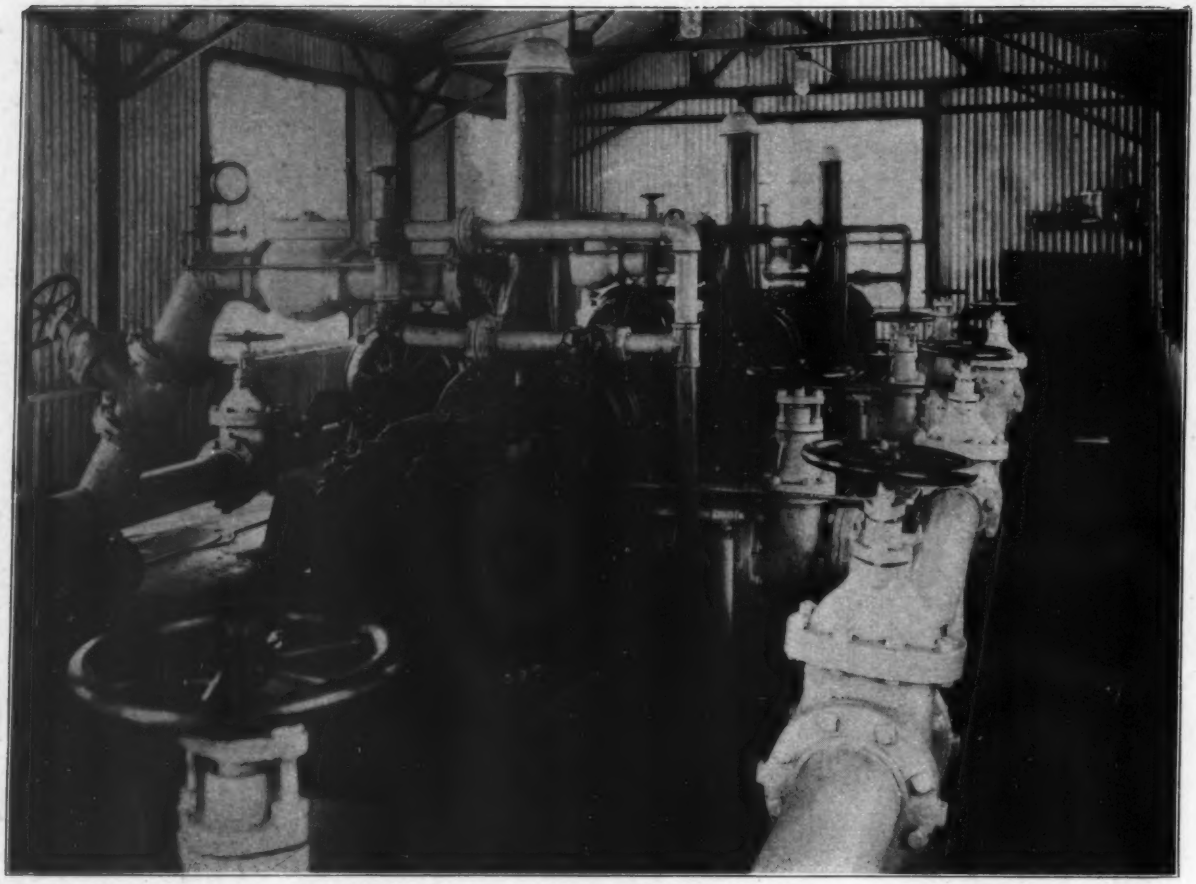
LUBRICATING STILLS
ROTARY KILNS
BONE BLACK FURNACES
BLEND TANKS
FILTER TANKS
SWEATER BUILDINGS
REFLUX TOWERS
PRESSURE STILLS
HOT OIL LINES

USE SIL-O-CEL

SIL-O-CEL
HEAT INSULATION

BUYERS' GUIDE NUMBER



Roots Rotary Pumps in service at the Skelly gasoline plant, Lyman, Okla.

Roots Pumps Eliminate Shutdowns

All Roots equipment is built to last indefinitely. When necessary Roots Pumps operate 24 hours a day throughout the year. Adjustments can be made while pump is operating.

We know of one gas pump that operated 8 years without a forced shutdown. It was then taken down to remove the sulphur.

Sturdy construction, absence of small parts and contact surfaces, elimination of internal lubrication makes this long life possible.

You have only to buy one Roots Pump—they last a lifetime.

Write for Bulletin No. 113

ROOTS

You should have the following bulletins in your files:

113—Roots Rotary Pumps.

108—Roots Rotary Gas Pumps.

111—Roots Positive Displacement Gas Meters.

118—Engineering Tables.

Just ask the nearest office for them.

The P.H.&F.M. ROOTS CO.

DEPT. 10

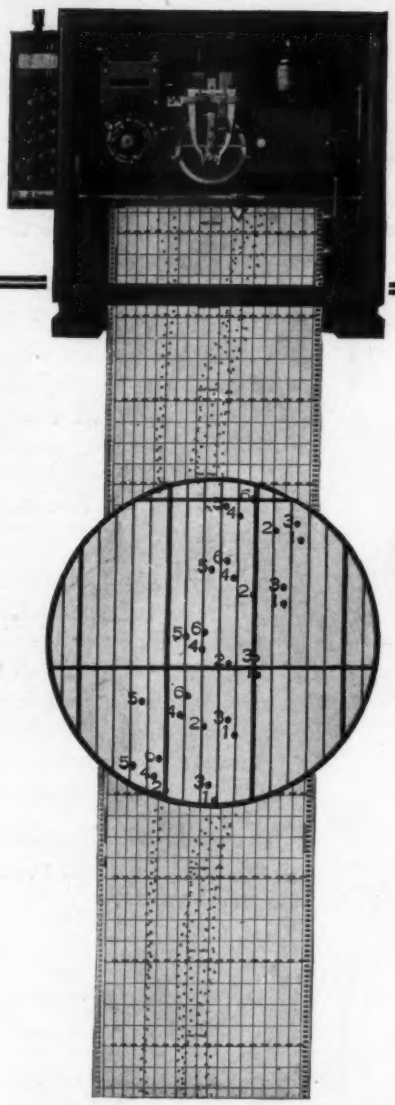
CONNERSVILLE, IND.

Chicago Office **130 S. Michigan Ave.**

New York Office **Room 800-120 Liberty St.**

Entered as second class matter June 16th, 1923, at the Postoffice at Houston, Texas, under the Act of March 3, 1879

AN ACCURATE RECORDER



L. & N. Multiple-Point Recorders

Record from one to sixteen thermocouples on a single chart 10 inches wide. Record temperatures of storage tanks at a central point.

for Every Process in the Oil Refinery

L. & N. Curve Drawing Recorders
Single-Point
for Vapor Line Temperatures

Two degrees F. is the readable accuracy. Charts are 10 inches wide. The vapor line temperature range is from 300 to 700 degrees F. Chart divisions represent 5 degrees F. (⅛-inch movement of the pen.)

L. & N. Two-Point Recorders
for Inlet and Outlet Temperatures

Records on a chart 10 inches wide. Range 600 to 1000 degrees F. Readable accuracy 2 degrees F. Gives a direct indication of the condition of the tubes.

L. & N. Single or Two-Point Recorders
for Fire Box Temperatures

Temperatures recorded, at one or two points in the fire box, on a single chart 10 inches wide. Range 800 to 1800 degrees F. Readable accuracy 5 degrees F.

Write for Catalog No. 87-R

It lists and describes the L. & N. Recorders

LEEDS & NORTHRUP COMPANY
4901 Stenton Avenue, Philadelphia

Automatic Cold Junction Compensation

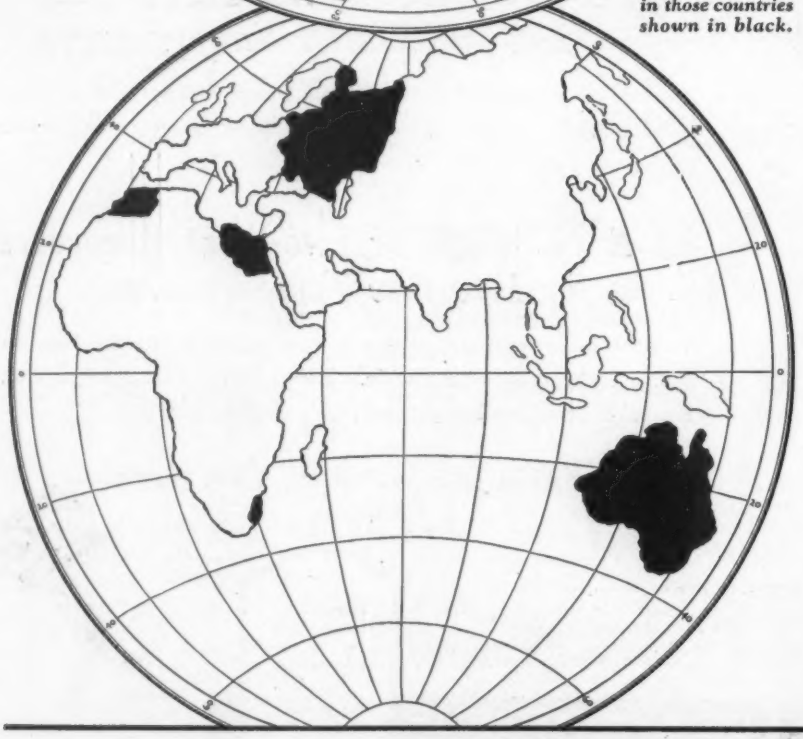
Independent of length of leads

LEEDS & NORTHRUP

Chicago, Ill. Los Angeles, Calif. San Francisco, Calif. Cleveland, Ohio

Wherever Oil is Stored

Oceco Equipment in those countries shown in black.



NOT alone in your community but in every continent on the globe, Oceco Equipment on oil tankage is guarding untold millions of barrels of oil against loss by fire and evaporation.

In this hemisphere you'll find Oceco from Hudson Bay to Cape Horn and from the Atlantic to the Pacific. In the eastern hemisphere you'll find it in Russia, in Africa, in Australia—in fact *wherever oil is stored.*

Such extensive use points to an international recognition of value.

On the Tanks

Automatic Tank Gauges
Breather Valves
Cable Sheave Brackets
Flame Arrestors
Tank Gauges
Gauge and Thief Hatches
Gauge Wells
Liquid Level Indicators
Manhole Covers
Nozzles
Superla Titling Vents
Swing Joints
Vent Units
Winches

On the Stills

Automatic Tar Plugs
Safety Valves
Look Boxes

THE OIL CONSERVATION ENGINEERING COMPANY
877 Addison Road *Headquarters for Tank Equipment* Cleveland, Ohio
25 Broadway, New York 325 Iowa Building, Tulsa, Okla.
O-S Building, Casper, Wyo. W. K. Henderson Co., Shreveport, La. Neilan, Abbey & Co., Los Angeles, Calif.

SAFETY

at what price?

HOW much is it worth to feel that you have done all to make your plant safe? Drop forged steel valves and fittings will assure that feeling of safety because they are designed to meet the extremes of pressure and temperature, being forged from solid open hearth steel bars of high tensile strength. The difference in their cost represents the cheapest insurance you can buy.

Vogt Drop Forged Steel Valves and Fittings are safe—you take no chances. They are tested before shipment at pressures and temperatures far in excess of their rated operating capacities. *THEY HAVE NEVER FAILED.*

Every Vogt Valve and Fitting is Tested

Vogt

Write for Catalog F.-6

Drop Forged Steel Valves and Fittings

HENRY VOGT MACHINE CO.
INCORPORATED
LOUISVILLE, KY.

New York Chicago Philadelphia Dallas

Manufacturers of: DROP FORGED STEEL VALVES AND FITTINGS, WATER TUBE AND HORIZONTAL RETURN TUBULAR BOILERS, ICE MAKING AND REFRIGERATING MACHINERY, OIL REFINERY EQUIPMENT.

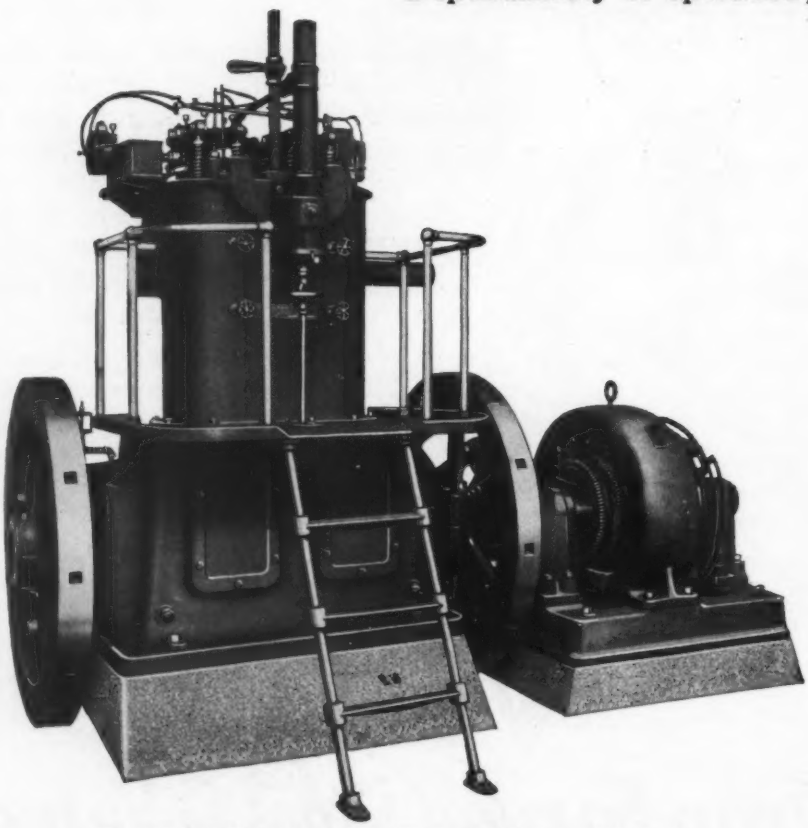
Four Big Reasons Why You Should Buy Bruce-Macbeth Engines:

Economy;

Ease of operation;

Responsive speed regulation;

Dependability of operation;



Bruce-Macbeth Engine operating auxiliary equipment in gasoline plant. Furnished in both two and four cylinder types.

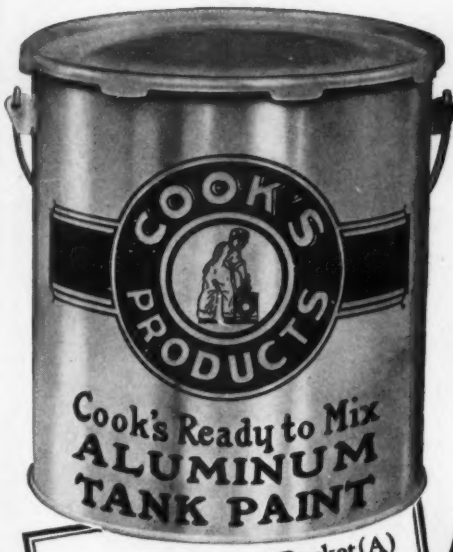
They just can't be beaten for generator drives—any number of units can be operated in parallel.

Write for information.

THE BRUCE-MACBETH ENGINE CO.

J. B. SIMLER, Dist. Mgr.

209 So. Cincinnati Ave., Tulsa, Okla. **Main Office and Works, Cleveland, Ohio**



$2.50 per GALLON

for COOK'S READY-TO-MIX

ALUMINUM TANK PAINT

Powder in the Small Bucket (A)
Liquid in the Large Bucket (B)
Together in a 5-Gallon Package

The large bucket "B" contains the Liquid and a separate bucket "A" which contains the Aluminum Powder. Remove the lid of the large bucket and take out the smaller Bucket containing Powder. Cut out the soft tin top of Bucket "A" and dump the Powder into the Liquid. Stir well with a wide, flat paddle that is long enough to reach the bottom of the large bucket.

Mix It on the Job as You Use It—

This *fresh* mixture gives a bright, shiny paint of superior quality, containing exactly the proper proportions of Powder and Liquid. Science has taught us that Aluminum Paint must be freshly mixed to be most effective. This unique Cook package assures *easy, foolproof mixing.*

Fight Sunshine with Cook's Tank Paint —Save 200 Barrels Yearly, Per Tank!

Government field tests on 55,000-barrel crude oil storage tanks show that Aluminum-painted tanks lose by evaporation 200 barrels less oil in a year's time than black tanks.

Black tanks absorb the heat from the sun's rays, causing excessive evaporation. Aluminum-painted tanks *reflect* the sun's rays, and thus remain cool. It's cheaper to paint a tank than to lose 200 barrels by evaporation!

POPULAR demand and quantity production enable us to offer Cook's Ready-to-Mix Aluminum Tank Paint at this new low price.

Science has proved that Aluminum Paint, to be most effective, must be applied when freshly mixed. Because "you mix it on the job," Cook's Aluminum Tank Paint is always sure to be fresh. And because it *is* fresh, it has greater "leafing power," it wears better and reflects light and heat more effectively. The improved Cook package assures easy and foolproof mixing in exactly the right proportions—giving you bright, shiny, *new* paint, with a covering capacity of 750 square feet to the gallon. The greater leafing power of the fresh Aluminum "seals in" the paint, giving maximum wear and maximum heat reflection. One coat will do the work. It may be applied with either brush or spray.

When repainting over old paint, apply Cook's Aluminum Paint direct, without a priming coat.

Unpainted tanks require a priming coat, for which we recommend Cook's Rust Inhibitive Primer, in five gallon cans at $2.25 per gallon. Covering capacity, 500 square feet to the gallon.

Send us the dimensions or capacity of your tanks with your order; and we will send you the amount of paint you will need to do the job.

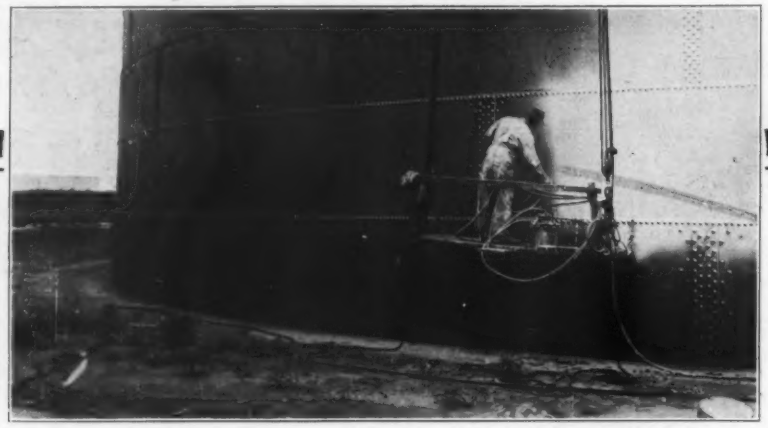
Prices quoted are F. O. B. at any of our factories or branches. Absolute satisfaction guaranteed or your money back.

Cook Paint and Varnish Company

Pioneers in the Manufacture of Specialized Paint for the Oil Industry

Factories: Kansas City, Mo.—St. Louis—Fort Worth

Branches: Chicago—Omaha—Wichita—Oklahoma City—Tulsa—Dallas Denver—Kansas City, Kansas—St. Joseph, Missouri



40 to 70% Reduction
in Painting Costs

If you are still hand painting it is costing too much. On most surfaces a hand painter only averages about 1200 square feet per day. The same painter using mechanical painting equipment will cover 6000 square feet or more per day effecting a 40 to 70 per cent reduction in the final cost of painting. Not only that, but fewer painters are required for a shorter time and the usual unnecessary delays and disturbances caused by painting are avoided.

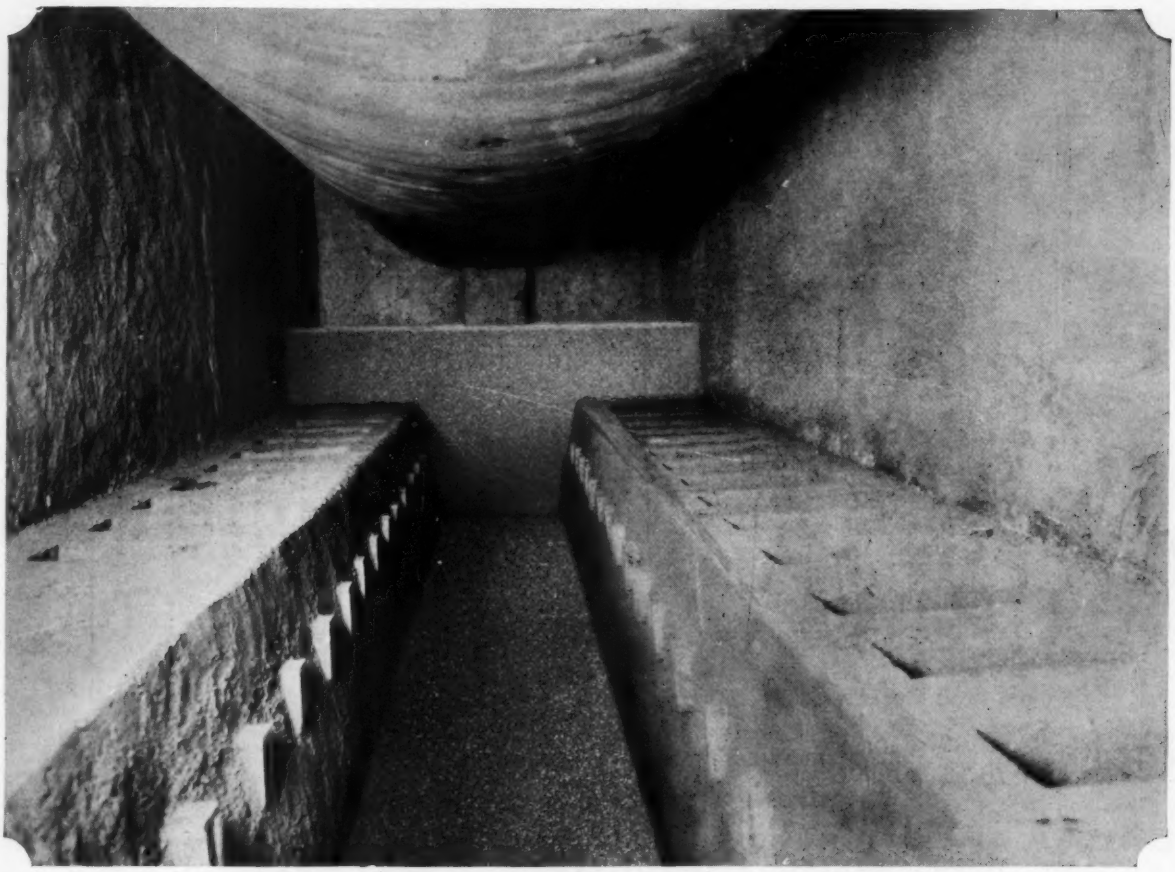
Matthews Mechanical Painting Equipment does a cleaner, better paint job and does not streak or mix in the surface dust. This frequently permits you to apply only one coat of paint and get the same results that a two-coat hand job would give. The Matthews Way is the modern, labor saving method of painting. It will make the money you are now spending for painting go much further. Write for the booklet

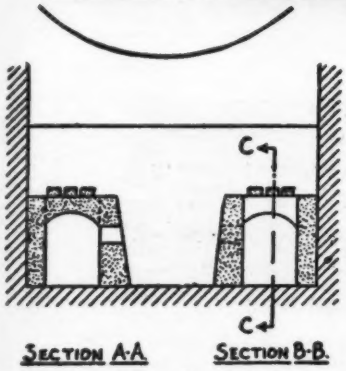
This is a complete one unit equipment for mounting on motor truck or trailer. It generates enough air to operate two units. Ask about Fig. No. 103.

"Mechanical Painting for Industrial Maintenance"

W. N. MATTHEWS CORPORATION
3734 Forest Park Boulevard, St. Louis, U. S. A.

MATTHEWS MECHANICAL PAINTING EQUIPMENT





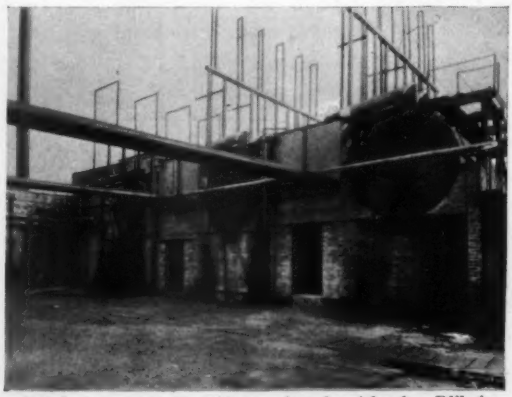
Cross-section of a Plibrico Diffusing Furnace

No flame reaches this still bottom!

THE flame is confined to the "dog-house" combustion chamber; the heat, but not the flame, is evenly distributed over the entire bottom of the still.

This construction assures longer still life and accurate still temperature control; it also assures complete combustion of the fuel oil.

No firebrick enters into this construction. It is built entirely of Plibrico, the plastic lining which is pounded in by anybody around the plant who can swing a mallet.



A battery of oil stills equipped with the Plibrico Diffusing Furnace.

The Plibrico engineer will explain why this easily-installed refractory lasts from two to four times as long as firebrick. He'll superintend the installation of a Plibrico Diffusing Furnace under your stills if you want. The coupon will get action overnight, for there's a Plibrico engineer right near you.

PLIBRICO JOINTLESS FIREBRICK COMPANY

1165 CLAY STREET, CHICAGO

Factories: Chicago and Trenton, N. J.

Send the Plibrico engineer (there are engineers in 85 cities) to tell me about the Plibrico Diffusing Furnace.

Oil Company .....

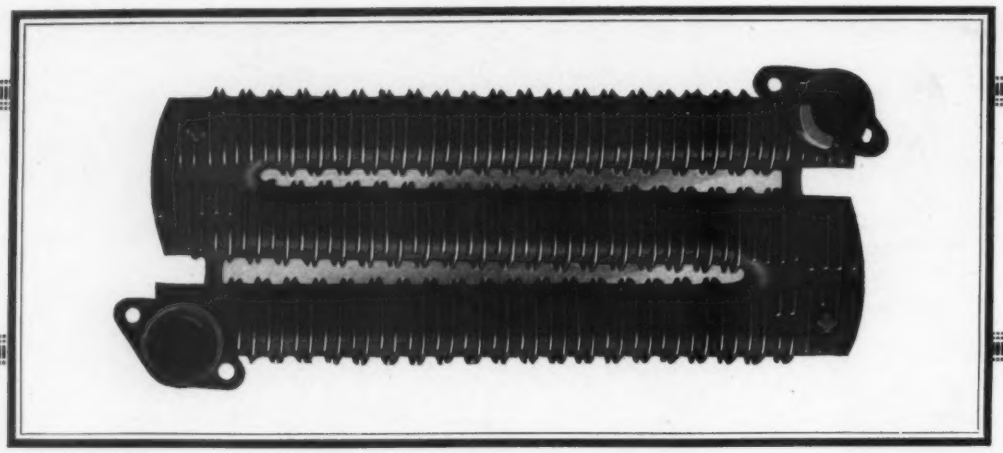
Address .....

.....

My name .....

To PLIBRICO JOINTLESS FIREBRICK CO.
1165 Clay Street, Chicago

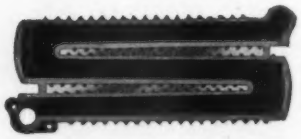
R4-Gray



Announcing—THE IMPROVED STERLING OIL 14-FT. SECTION

THE new Sterling Oil 14-foot Section adds these three big improvements to the Sterling Sections which are rapidly becoming standard equipment in oil refineries and absorption plants—

SHORT BOLTS
WIDE RADIUS AT THE BENDS
REINFORCED ENDS



Cross section of the new 14-foot Section. Note the wide radius, reinforced ends.

The short bolts reduce the cost of the bolt where water conditions necessitate the use of other than steel bolts and eliminate to a large extent the erosion of the steel bolt.

The wide radius, reinforced ends reduce the velocity at the bends. Naturally, this tends to increase the life of the section and to reduce the pressure drop through the coils.

A stack of the new 14-foot Sections. Note the short bolts for assembling.

We shall be glad to send you our new illustrated catalog which describes all the advantages of Sterling Oil Condensing Sections and gives complete information on the improved 14-foot Section and additional accessories. Just mail the coupon.

STERLING OIL SECTIONS

For manifold use - for continuous use - for cooling

AMERICAN RADIATOR COMPANY

40 West 40th Street, New York, N.Y. 816 So. Michigan Avenue, Chicago, Ill.

Sterling Oil Sections are immediately available at our plants in KANSAS CITY, MO., SPRINGFIELD, OHIO, BUFFALO, N. Y.

AMERICAN RADIATOR COMPANY

Direct Mail Advertising Dept. 131
1807 Elmwood Ave., Buffalo, N.Y.

GENTLEMEN: Please send me complete information on the Improved Sterling Oil 14-Foot Sections.

Name _____

Address _____

THINK IT OVER!

Do You Know That

No. 325 SILVR-COOL

The Super Aluminum Paint

Has served over three years on Oil Tankage in the Southwest, where severe exposure conditions have repeatedly caused failures of many types of paint, including other aluminum finishes, in a year or less?

SILVR-COOL *is still on the job—showing no need of repainting.*

It is the cost per year that should guide you in the selection of aluminum paint.

Silvr-Cool Costs Less Per Year

SILVR-COOL

The Super Aluminum Paint

IS MADE BY

Detroit Graphite Company

DETROIT, U.S.A.

WAREHOUSES AT ALL PRINCIPAL CENTERS

The Holmes-Manley *Cracking* Process

In 1925
THE TEXAS COMPANY
produced by this process
8,235,955 barrels of
gasoline from 14,039,272
barrels of fresh charging
stock. - - - -

The Licensee receives:—

1. *A Proven Process*
2. *Complete Technical Service*
3. *The Benefit of Future Developments*

Licenses Granted by

THE TEXAS COMPANY, U. S. A.

Apply to

R. C. HOLMES, *President*

17 Battery Place, New York, N. Y.

JENKINS CRACKING PROCESS

PRODUCES QUALITY GASOLINE

Facts from performance

ENDORSEMENT

Recent investigations by unbiased Refiners has resulted in an unqualified endorsement of the Jenkins Process as the most economical and modern cracking equipment.

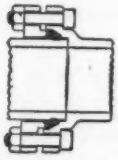
You can obtain information from operators which will give you the facts.

GRAVER Corporation Founded 1857

EAST CHICAGO, INDIANA

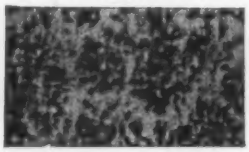
NEW YORK Grand Cent. Term. | CHICAGO Steger Building | TULSA Atlas Life Bldg. | HOUSTON West Building

SIMPLEX CAST IRON CONDENSER PIPING

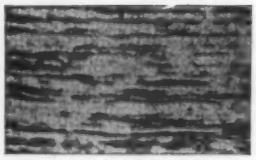


"ONE FLANGE IS LOOSE"

COATS ITSELF



Photomicrograph of cast iron, much enlarged, showing granular structure.



Photomicrograph of wrought iron, much enlarged, showing fibrous structure.

A piece of sheet steel, much enlarged, showing surface and sectional structure with a typical pit.

AUTHENTIC data from over 250 years of service prove that cast iron becomes coated with rust but remains practically unimpaired in weight and strength under conditions that are fatal to other kinds of metal.

Scientists believe this phenomena due to the microscopic structure of cast iron —a structure of the same granular or crystalline form as found in the iron ore from which it is made and which has laid unimpaired in the ground for untold centuries. Cast iron rusts on the surface, but the corrosive agent fails to break the natural mechanical bond between the irregular shaped granules, further oxygen is excluded by the first rust coating, and therefore corrosion stops. Cast iron literally coats itself.

In place of the interlocked grains or crystals of cast iron, wrought iron and steel are of a fibrous and, in thinly rolled steel, of a laminated structure, with distinct leaves overlapping each other. As corrosion takes place, these leaves or fibres scale off, constantly presenting a fresh surface to the corrosive agent.

Simplex pipe is flanged pipe minus the limitations of a joint made with rigid flanges. Thousands of feet of this material has been in use for years by the leading oil refineries of the United States for oil condensers.

Write for Simplex Condenser Catalog Number 55

AMERICAN CAST IRON PIPE COMPANY

General Offices and Foundry: Birmingham, Ala.

Branches at
Dallas, Kansas City, San Francisco, Los Angeles, Chicago; New York,

Write Also for information on Our Prepared Joint Cast Iron Pipe for Oil Lines

WESTCOTT & GREIS INC.
MEASUREMENT & CONTROL

THIS TRADE-MARK

MEANS:

Prompt, efficient and dependable service to refiners on the following products:

Metric Meters, for every measuring purpose.
Westcott & Greis Tank Equipment.
G. M. Davis Regulators.
Chaplin-Fulton Regulators.
Crosby Steam Gauges.
Meriam Products.
Bristol's Charts and Recording Gauges.
McDonald 2-lt. 3-diaphragm Meters.
Kreb's Levelling Saddles.
Complete stock of orifice meter repair and replacement parts.
Reliance Regulators.

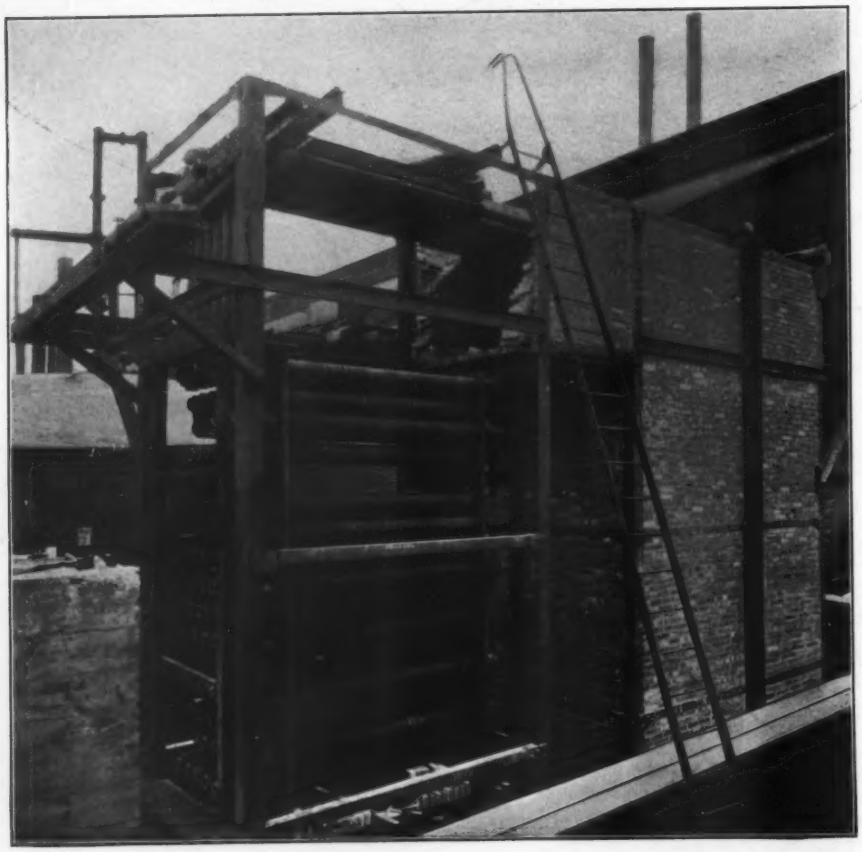
WESTCOTT & GREIS, INC.

Dallas TULSA Los Angeles

Westcott & Greis maintain a corps of able and efficient engineers who are capable of handling your measurement and control problems to your complete satisfaction. A line to us will place you under no obligation and will prove decidely beneficial in profitable results.

FOSTER

TUBE STILLS



Foster Tube Stills burn the fuel completely, absorb efficiently the heat generated, and prevent overheating the oil or the heating surface. The design of Foster Tube Stills is based on a quarter century of experience in solving heat transfer problems of every nature, and more than 400 highly successful refinery installations testify to Foster efficiency and reliability.

POWER SPECIALTY COMPANY

111 Broadway, New York

Branch Offices in All Oil Centers

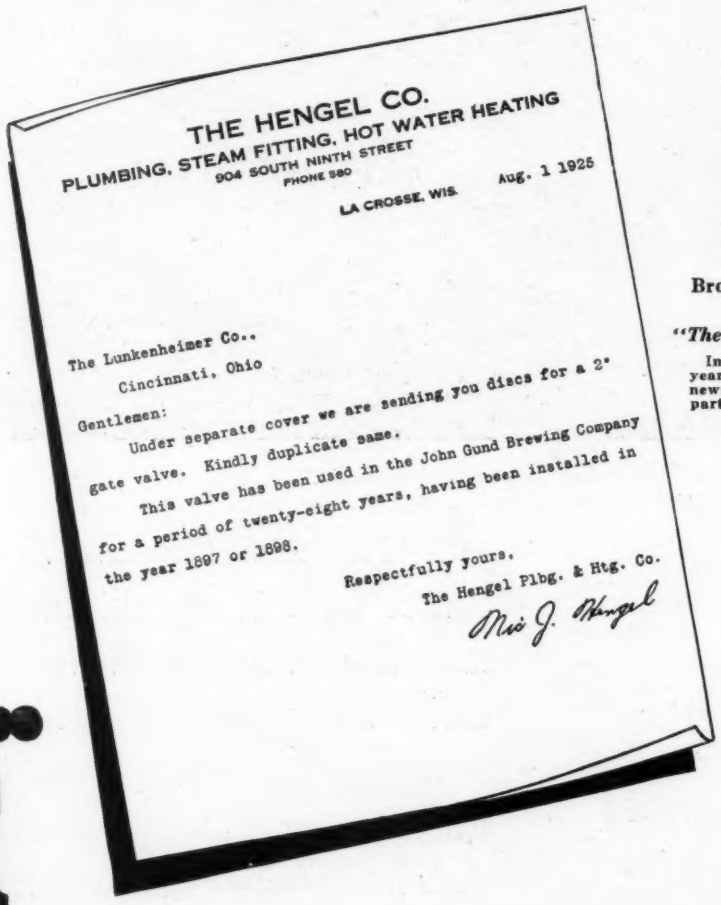
After 28 Years of Service

It was only necessary to renew the discs, to make the valve good for many added years of service.

Lunkenheimer Bronze Double Disc Gate Valve

"The Leader in the Nineties"

In actual service for 28 years, and then—required renewal of discs only. All other parts are in excellent condition.



THE HENGEL CO.
PLUMBING, STEAM FITTING, HOT WATER HEATING
904 SOUTH NINTH STREET
PHONE 580
LA CROSSE, WIS. Aug. 1 1925

The Lunkenheimer Co..
Cincinnati, Ohio

Gentlemen:

Under separate cover we are sending you discs for a 2" gate valve. Kindly duplicate same.

This valve has been used in the John Gund Brewing Company for a period of twenty-eight years, having been installed in the year 1897 or 1898.

Respectfully yours,
The Hengel Plbg. & Htg. Co.
Mic J. Hengel

Lunkenheimer Bronze Double Disc Gate Valve
Fig. 427
"The Leader Today"
150 lb. W. S. P.
Sizes ¼ to 3 in.

Lunkenheimer Bronze Double Disc Gate Valves are illustrated and described in an attractive folder, a copy of which will gladly be sent upon request, without any obligation.

JUST FILL IN AND MAIL THE COUPON.

THE LUNKENHEIMER CO.
"QUALITY"
LARGEST MANUFACTURERS OF HIGH GRADE ENGINEERING SPECIALTIES IN THE WORLD
NEW YORK CHICAGO CINCINNATI, U.S.A. BOSTON LONDON
EXPORT DEPT. 129-135 LAFAYETTE ST., NEW YORK

THE LUNKENHEIMER CO. P. O. Box 876, Cincinnati, Ohio
Gentlemen:—Please send me, without obligation, a copy of your Bronze Gate Valve Folder No. 550.
Name .....
Firm .....
Address .....

11-17-89

Smithsteel Cracking Still leaving the huge Smith plant at Milwaukee. Photograph taken July 25, 1925

ANY Wall Thickness Required!

SMITHSTEEL Pressure Vessels can be built in any thickness, in any diameter and of any length to withstand any specified pressures to meet all operating conditions. Entirely new methods are used in their manufacture to obtain results well worth investigating.

A. O. SMITH CORPORATION
Milwaukee, Wisconsin
TULSA · LOS ANGELES

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CRACKING STILLS

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The REFINER
and NATURAL GASOLINE MANUFACTURER

EDITED MONTHLY AT TULSA, OKLAHOMA

GRADY TRIPLETT, *Editor*

Published by
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HOUSTON, TEXAS

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Is Gravity a Fair Basis for Crude Value

By George W. H. Reid

IS the quality of crude petroleum determinable through its simpler physical characteristics? Can the purchaser of a given lot, or tank, or the buyer of a pipe line delivery, depend upon the appearance, odor, color, or the rapid centrifuging, and the indicated specific Baume, or A. P. I. gravity—as interpreted through the use of various brands, types, and shapes, of more or less accurately calibrated hydrometers—as the index to the value of the oil to him?

After the gaugers for all parties concerned in a given transaction, have accurately measured the volume of oil; determined the temperature; agreed upon the content of foreign matter and basic sediment, and determined to their satisfaction the gravity (weight) of the oil—then, usually, the deal is closed, and the oil is bought and sold; and the guiding factor, the basis upon which payment is made, is that weight, heaviness or gravity.

Undoubtedly this knowledge is necessary and the accurate determination of the above simple physical properties of crude are of primary importance in the marketing of oil; but the fact remains that these determinations can and must be classified as merely—let it be called "surface" indications. The investigation has not gone "deep" enough. Nothing is actually known relative to the final "break-up" of the oil into its various fractions; its yields upon distillation of its all too variable components—gasoline, kerosene, heavier distillates and residuum. Usually the purchaser, the refiner, has some knowledge of the value of the crude involved, based upon his past experience with crude from the same source or pool, and in his rush to secure oil for the continuous operation of his plant, he pays the price as quoted in current schedules, and then, probably during the time his plant is distilling it, analyzes the crude in his labaratory, generally too swiftly for accuracy, and thus discovers what he has purchased.

Demanding Analysis

This method of handling the purchase of crude oil, though the reverse of good practice, has been extensively prevalent among refiners throughout the various refining districts of the country. More and more, however, are the purchasers of crude oil demanding an accurate analysis of their raw product prior to purchase or acceptance.

The determination of the value of crude, and the governing factor influencing the value is rightfully, at present, based upon the quantity of the higher priced fractions contained in a given oil, which can be removed by skimming plant operation. The content of gasoline in crude from even a single field or pool is of variable volume and quality; governed by field conditions, storage conditions, length of time stored, dehydration, etc. Further, the price of the gasoline when removed is still another variable factor, being dependant, more or less, upon seasonal conditions. The fact that the refiner's recovery of gasoline from crude oil is so variable, and that his selling price is subject to fluctuation, makes it imperative that a complete analysis of his proposed purchase of oil be secured.

The tendency of present day refiners toward the realization that gasoline content is the governing factor in the purchase price of crude oil, and the growing practice of procuring analyses before purchasing, is, probably, the underlying cause or starting point for certian rumors current to the effect that price schedules are to undergo a rearrangement in the not distant future.

Changes Possible

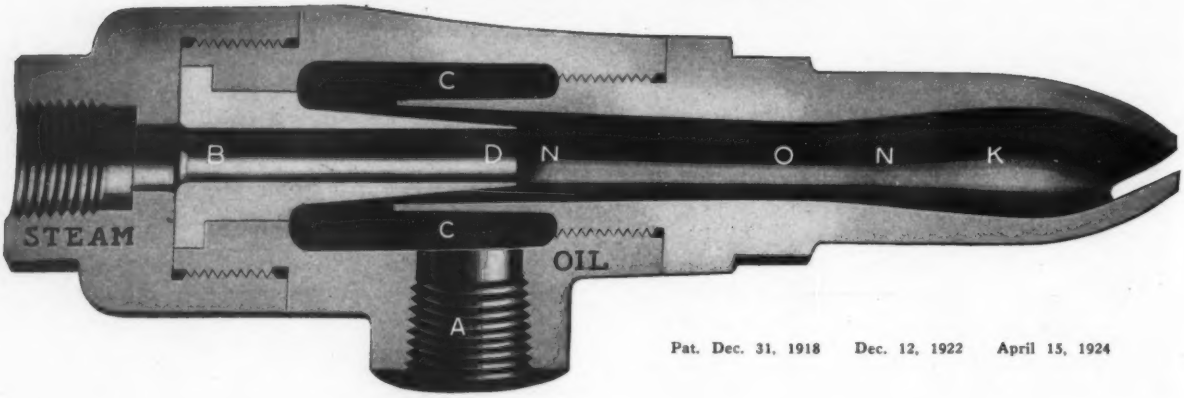
For some time the subject of gravity as a basis of crude valuation has been discussed by both producers and refiners of crude petroleum. There has been some little criticism among men in oil circles of this means of determining the value of crude; and the injustice or inequalities of the present schedule is brought to light in the table accompanying this article. The price schedule as affecting Oklahoma, Kansas, North and East Central Texas, at present, ranges from $1.40 for 28 degree A. P. I. crude to $3.32 for 52 degree A. P. I.—with a difference of eight cents for each degree rise in gravity.

In the preparation of the following tables the publications of the Bureau

The Annual Buyers' Guide

Starting on page 51 of this issue, contains a complete list of all equipment used in Refineries and Natural Gasoline plants together with the name and address of recognized manufacturers and supply dealers. Here is a buying directory that will meet your every requirement. Don't let this copy go in your regular files, but keep it on your desk or with your buying records. You will find it invaluable when purchasing plant equipment.—The Editor.

NATIONAL AIROIL BURNERS



Pat. Dec. 31, 1918 Dec. 12, 1922 April 15, 1924

OVER ONE HALF OF ALL THE REFINERIES IN THE COUNTRY ARE NOW USING OUR STEAM ATOMIZING OIL BURNERS

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We would like to send you our Bulletin No. 21, describing and illustrating our Burners and Control Valves, together with our special prices to petroleum refineries.

NATIONAL AIROIL BURNER COMPANY

NINTH AND THOMPSON STREETS

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of Mines, covering the analysis of representative samples of crude from every field, was used as reference. The tables are prepared according to the gravity of the crude delivered from different pools, placing all crude of a similar gravity in a separate table—then giving the gasoline and kerosene content—showing, by quoting price, the inequalities of the present price schedule as affecting the territory quoted—Oklahoma, Kansas, North and East Central Texas.

32 Gravity Oil

Field—	A. P. I. gravity	Perc't Gas-oline	Perc't Kero-sene
Hogshooter	32.0	22.0	17.7
Augusta, Kan.	32.0	24.2	26.5

Price—$1.72—range of gasoline content 22 to 24 percent.

33 Gravity Oil

Walters, Okla.	33.0	27.7	17.7
Hewitt, Okla.	33.2	26.6	14.3
Comanche, Okla.	33.4	26.3	17.1
Okmulgee, Okla.	33.8	17.3	17.3
Yale, Okla.	33.2	24.8	17.8
Claremore, Okla.	33.7	23.8	19.2
Deleware, Okla. (Ext.)	33.0	25.3	17.6
K. M. A., Texas	33.9	31.2	16.1
Corsicana, Texas	33.7	19.7	23.8

Price—$1.80—range of gasoline content—17 to 31 percent.

34 Gravity Oil

Brownwood, Tex.	34.7	24.5	16.5
Mounds, Okla.	34.1	28.2	15.5
Owassa, Okla.	34.5	26.9	18.8
Broken Arrow, Okla.	34.1	26.2	17.8
Muskogee, Okla.	34.3	19.5	17.8
Cement, Okla.	34.3	20.2	20.7

Price—$1.88—range of gasoline content—19.5 to 28.2 percent.

35 Gravity Oil

Duncan, Okla.	35.1	31.4	18.0
Osage, Okla.	35.5	28.9	18.0
Pershing, Okla.	35.5	26.4	19.9
Big Heart, Okla.	35.5	28.1	19.1
Strawn, Texas	35.3	24.4	20.2
Breckenridge, Texas	35.9	30.0	18.8

Price—$1.96—range of gasoline content—24.4 to 31.4 percent.

36 Gravity Oil

Jennings, Okla.	36.7	32.9	18.6
Cleveland, Okla.	36.5	30.6	19.8
Henryetta, Okla.	36.3	25.3	18.3
Boynton, Okla.	36.5	24.1	19.6
Hominy, Okla.	36.7	30.9	19.1
Burkburnett, Texas	36.5	36.7	17.0
Holliday, Texas	36.9	38.2	16.3
Petrolia, Texas	36.5	34.0	18.7
Desdemona, Texas	36.9	29.4	19.4
Ranger, Texas	36.7	30.2	19.7

Price—$2.04—range of gasoline content—24 to 38 percent.

37 Gravity Oil

Field—	A. P. I. gravity	Perc't Gas-oline	Perc't Kero-sene
Burkburnett, Texas	37.1	36.3	17.7
Thrall, Tex., (lght.)	37.3	26.4	20.8
K. M. A., Texas	37.5	35.1	18.1
Burbank, Okla.	37.3	29.7	16.9
Lyons, Okla.	37.5	28.3	17.4

Price—$2.12—range of gasoline content—26.4 to 36.3 percent.

38 Gravity Oil

Blackwell, Okla.	38.7	36.3	18.0
Beggs, Okla.	38.7	30.0	14.9
Moran, Tex., (lght.)	38.7	34.4	17.2
Young, Texas	38.1	34.6	18.7

Price—$2.20—range of gasoline content—30 to 36 percent.

39 Gravity Oil

Cushing, Okla.	39.1	37.5	18.0
N. Bristow, Okla.	39.9	38.8	18.1
Deaner, Okla.	39.5	32.1	16.4
Electra, Texas	39.9	40.9	16.1

Price—$2.28—range of gasoline content—32 to 40.9 percent.

40 Gravity Oil

Newkirk, Okla.	40.1	35.9	18.9
Billings, Okla.	40.1	40.4	17.6

Price—$2.44—range of gasoline content—35.9 to 40.4 percent.

41 Gravity Oil

Bald Hill, Okla.	41.6	37.6	16.5
Hirshi, Texas	41.1	42.0	13.8
Olney, Texas	41.9	43.8	14.2

Price—$2.44—range of gasoline content—37.6 to 43.8 percent.

A study of the foregoing tables points to the unequitable manner in which Mid-Continent crudes are classified and priced, using gravity as a basis of classification. For example, eight or nine fields producing crude of about 33 gravity represent a gasoline content ranging from 17 percent to 28 percent—all for one price, $1.80 per barrel. Similar conditions exist with respect to other fields producing oil of other gravities. The various oils, all graded or classed as one, as to marketability, are of vastly different types, and of very different composition. This condition brings to notice the fact that many refiners are more fortunate in their geographic location, so far as price of crude is concerned, than certain of their fellows in the industry—and at the same time the condition of one price for numerous grades of crude of different quality, and of numerous prices for the same grades of crude (based on quality—that is: gasoline) is much in evidence, and a study of the tables conclusively upholds the contention of many crude buyers in the industry, that the present price schedule is inequitable.

Different in California

A study of California crude oil price schedule brings to light certain apparent discrepancies in the quotations but it is noticeable that California grades differ in price, only three, four and five cents for each grade quoted, or each degree rise in gravity. It is understood that the price schedule appearing as quotations of California production is based almost entirely upon the technical analysis of the particular oil in question. Thus, for example, a given grade (gravity of oil) is quoted at various prices, depending upon its source (field) and break-up upon distillation.

35 gravity crude is quoted as follows:

Rosecrans-Dominguez	$1.76
Santa Fe Springs	1.76
Coalinga	1.54
Santa Maria, Ventura, and Salt Lake	1.60

25 Gravity crude—

Long Beach	25 gravity	$1.26
Richfield, Huntington B.	25 gravity	1.26
Brea, Olinda	25 gravity	1.26
Torrance and Inglewood	25 gravity	1.26
Whittier, La Habra and Montebello	25 gravity	1.00
Santa Fe Spring	25 gravity	1.05
Coyote	25 gravity	1.18
Midway-Sunset and Elk Hills	25 gravity	1.16
Coalinga	25 gravity	1.04
Wheeler Ridge	25 gravity	.93
Santa Maria, Ventura and Salt Lake	25 gravity	1.13

In addition to basing the price quotations upon analysis, the refiners of the West Coast almost without exception, carefully analyze the crude offered them before making the purchase.

In the four point method of crude analysis extensively employed in California, the directions issued for making this test include the following statement: "The lowest yield indicated, computed on the basis of original crude is considered to be specification gasoline content of the crude." Needless to state, this determination governs the sales price of the crude analyze.

Crude prices can not, at the present time, be based upon the ultimate yield of gasoline when conversion is aided by the cracking unit. Present prices must, or should be, based upon the quality of the crude considering only the skimming or non-pressure distillation methods. With the advent of the intensive employment of the cracking art will perhaps come another reorganization of the price schedule, but that time lies in the future. However, the fact remains, and can not be overlooked, that the cracking unit is finding its way into great numbers of refinery yards, and due to their activities the yield of gasoline per barrel of crude oil is being materially increased.

The re-arrangement of crude prices affecting the mid-continent, eastern and southern fields cannot, however, come too soon. Just as the raw products of the several other major industries of the United States are bought and sold upon the basis of quality alone, so must the producer and purchaser of crude petroleum base their transactions upon the quality of their commodity, and the determination of that condition is contingent upon the accurate analysis of the crude oil.

Traffic Matters to Demand Attention At N. P. A. Session

Eastern refiners to hold semi-annual session at Cambridge Springs, Pa., April 15 and 16

RATE and traffic matters are due for lengthy consideration at the semi-annual session of the National Petroleum Association at Cambridge Springs, Penna., April 15 and 16. The bulletin, announcing the program, carries this from the office of Fayette B. Dow, Washington counsel of the organization:

"The traffic department is functioning actively and successfully on a very large number of important matters. The trustees feel that the membership should be advised as to what this department is doing and as to the recent rate developments, which will require action either by the association or by groups of the members with the association of the department. Therefore, it is proposed to devote practically the entire morning of the first day to this subject. It is desired that as many of the traffic managers be present as possible. At 3 p. m. the first day, traffic managers will hold a group meeting."

While rate and traffic matters as well as other subjects of importance to the management of member companies will occupy a big place on the program, there will be sessions devoted to operating problems, for the bulletin from the Washington office also contains this line, "several engineers from outside of the association will be present to discuss manufacturing problems."

The first session on manufacturing will come the afternoon of the first day when P. S. Tarbox will handle the subject, "Reduction of Manufacturing Expense by Ascertainment of Refining Costs." Discussion will follow the presentation of this.

The morning session of the second day will be devoted to the general subject of manufacture, when Charles L. Parmlee will have the subject, "The Refinery—Present and Future." The work of the department of manufacture will be brought before the meeting in three discussions—The Program of the Department—Boiler House Practice—Saving Steam. Each of these is expected to bring forth suggestions from engineers present.

The afternoon of the second day will be devoted largely to matters concerning the association.

Entertainment will be confined to the fellowship supper, the evening of the first day of the convention. Fred G. Clark is in charge of entertainment. The announcement with the program is to the effect there will be no speeches.

The program, subject to amplification follows:

PROGRAM

Thursday Morning, April 15

President Keeney Presiding.

10:00 A. M. Opening remarks, O. P. Keeney, President of the Association.

The Traffic Department:

(a) The Work of the Department at Washington.

(b) The Traffic Groups.

(c) Rate Situations Requiring Discussion and Action.

Willis Crane, Traffic Attorney, National Petroleum Association.

12:30 P. M. Adjournment for lunch. The trustees of the association will meet at lunch.

Thursday Afternoon, April 15

O. P. Keeney, presiding.

2:00 P. M. The Modern Trade Association in Action. (Speaker to be announced.)

Remarks, Fayette B. Dow.

Uniform Accounting for the Oil Industry, W. W. Mattison, American Petroleum Institute.

Discussion.

Reduction of Manufacturing Expense by Ascertainment of Refining Costs, P. S. Tarbox, Trustee in charge Department of Economics, Accounting and Statistics.

Discussion.

Thursday Evening, April 15

R. A. Wotowitch, presiding.

6:30-7:30 P. M. Illustrated Talk on Fire Prevention, Houston Dunn, Managing Director, Association of Fire

(Continued on page 161)

Natural Gasoline Program Assures Outstanding Convention

Tulsa, Okla.—Plans, looking to the most successful convention of the Association of Natural Gasoline Manufacturers are being rapidly completed in the office of A. V. Bourque, secretary of the body. Dates are May 5 and 6 and all sessions will be in the Mayo Hotel here.

Although the program is not yet completed, it is certain to have its chief interest in the several technical subjects, a phase of oil convention programs introduced by this association and now a fixed part of each gathering.

The banquet this year will be held the night of the last day of the convention. It will be in the nature of a dinner dance. James A. Veasey, counsel of the Carter Oil Company, will be toastmaster. The chief speaker of the occasion will be C. C. Herndon, vice-president of the Skelly Oil Company.

Following an event of the convention a year ago, Westcott & Greis will entertain convention delegates with a lunch one day at the Mayo Hotel. The exact day for this has not been fixed.

Among the papers already assured for the convention are:

"Research of Absorption Oil," Arthur L. Davis, chemist of the Empire Refineries, Inc. Discussion of this subject will be led by A. F. Maxson, plant engineer of the Sun Company.

"Depreciation and Depletion," A. B. Morris, Chestnut & Smith Corp. R. R. Owens, superintendent of the gasoline department of the Marland Oil Company will lead this discussion.

"Petroleum Trade Association," W. R. Boyd, Jr., assistant secretary and counsel of the American Petroleum Institute.

The report of the gas testing committee of the Association will be given by George Bunn, assistant superintendent of the Gasoline Department of the Phillips Petroleum Company.

The report of the Gas Contract Committee will be given by J. H. Boyle, secretary of the Chestnut & Smith Corporation.

The gas testing committee has spent most of the past year in completing its work in so far as the present report is concerned. The nature of the work has aroused keen interest in findings of the committee. This report seems certain of arousing keen interest.

Several other papers are to be added to the program. When the list is complete, it is certain to present a valuable contribution to the development of the natural gasoline industry.

Refining District Centers About Great Lakes

Roxana project result of growing use of automobile in Middle West and in Canada

By Keith J. Fanshier

IT BECOMES increasingly apparent that a new classification is becoming necessary in grouping American petroleum refineries. To realize this, it is necessary only to center attention upon a community of refining plants which to date has been much overlooked as constituting a separate, homogeneous entity.

The group referred to may be classified easily and naturally as the Great Lakes refining district. In grasping the true significance of this classification and grouping it is essential to ignore national and territorial boundary lines and study the situation along natural, geographical considerations.

The underlying importance of this viewpoint becomes more evident when the Canadian boundary line is disregarded and refineries on or around the Great Lakes, regardless of nationality of ownership or of situation in the United States or Canada, are considered together.

The event which has caused attention both in and outside of the refining industry to be focused on this group is the recent announcement of the drawing of another great refining enterprise into this district. The company referred to is the Roxana Petroleum Corporation and the project is the proposed construction of another large refining plant at the foot of Lake Michigan.

Capacity Growing

With this addition to the Lakes refining community, it seems clear that at the end of another year the Great Lakes group of the American refining industry will be composed of not less than 25 plants with capacity of a total figure approaching 200,000 barrels of crude oil a day.

Growth of the refining industry in the American "Land o' Lakes" becomes more interesting when it is considered in conjunction with the fact that this territory, with the exception of a district in southern Ontario, is far removed from any sizeable producing area developed on a large scale in recent years. This is seen to be plain through reference to the accompanying map, which represents the relation of the Great Lakes plants to principal producing areas of the United States and Canada. It is true, of course, that some of the old fields of Ohio, Indiana and Illinois are not far distant from some of the southern lakeside refineries, but it is likewise true that the importance of these fields as concerns the supplying of crude oil to these refineries for the most part is small, the fields being far depleted in production.

Built for Distribution

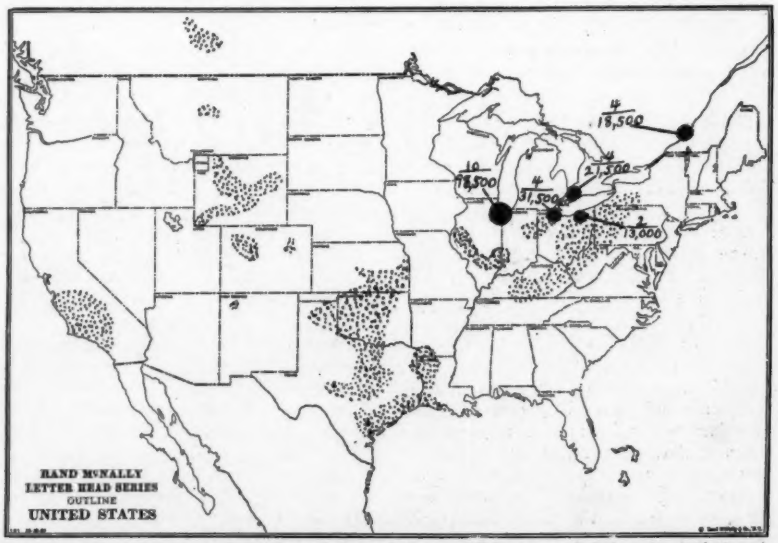
It follows that the building up of the lakes refinery group has been by reason of and with reference to disposal of output on efficient, adequate and expedient basis rather than with reference to proximity of sources of supply. A few of the older plants, of course, were built through considerations allied with the obtaining of crude from nearby fields, but this reason as a determining factor in location long since failed to hold dominance.

The 200,000 barrel a day capacity of the lakes region plants by late 1927 will mean a daiy gasoline output of some 4,000,000 gallons in this area. In the grouping of plants under this heading, it should be realized that none of the Pennsylvania plants are included. Neither are there included numerous plants in Ohio, Indiana, Illinois, Minnesota and various provinces of Canada which miss a real lake connection by as much as a few miles. The only refining center not actually on the Great Lakes or a navigable tributary nearby are the plants at Montreal, Canada, on the St. Lawrence River, which can readily be gathered into the same general category as lake plants.

The primary reason for grouping both United States and Canadian plants under one head in this article and the reason which will bring about their viewing in this fashion more and more in the oil industry is the shaping up of developments having to do with consumption.

Looking to Canada

Canny refiners have an eye on the Canadian consumption of gasoline as a material factor in developing the total of all gasoline consumption on this continent. At the present time Canadian consumption is small compared with that of the United States. Nevertheless leaders in the automobile industry see in Canada a great untouched field for expansion of the motor industry, and that within the next few years. Canada is seen as more nearly unscratched as a field for motor vehicle sales and use, in comparison with the present situation, than is the United States. It is with these and related facts in mind that the lakes refiners



This map shows the extent of the Great Lakes refining establishments and their unique relations in physical location to important sources of crude supply. While the important oil fields are gradually drawing away from the lakes, the volume of lake refining capacity is growing steadily. The important producing areas are represented by small-dotted districts and the principal lake refining centers by black circles. The map tells an interesting story of the importance and competition of various kinds of transportation in the petroleum industry. Map on projected 1927 basis—numbers refer to number of plants and daily capacity by groups.

are conducting their business. A number of oil refining companies not now represented with plants on the lakes are alive to this, as having a possible bearing on their future operations. It is thought likely that other large refineries may be announced for the district in the near future.

It is admittedly with the Canadian business ultimately in mind that Roxana has planned its project at Hammond, Ind., on Lake Michigan. Of course the plant will serve the company's business in the United States and the jobbing business in this country through the new refinery for a time and possibly permanently, with at least a portion of its capacity. But is is believed the growing Canadian gasoline and lubricating oil consumption was a great part of the attraction of the location which brought about the decision.

Plans by Roxana

F. Godber, president of the company, remarked to the writer that early published reports on the size of the plant were greatly exaggerated. Enthusiastic realty interests boosted the total investment to as much as $35,000,000. This figure is more than 100 per cent too high, at least as concerns the immediate future, according to President Godber. It is considered that the investment necessary for realization of plans of the present will be within the figure of $15,000,000.

Tied up with all the Great Lakes plants and their problems of transportation of products is a keen interest in the outcome of the Great Lakes-St. Lawrence waterway fight. Even at present, without such developments, the Roxana would be enabled to ship comparatively cheaply to all the territory fronting into the lakes from its new refinery. Unquestionably the gasoline consumption both in the northern tier of middle western and central western territories and in Canada is due for a big increase in the next few years. It would not be surprising to see more refineries at the southern edge of Lake Michigan. Connection to the Mid-Continent fields by pipe line to the foot of Lake Michigan gives them the closest possible connection with the cheap transportation costs the water traffic affords.

Including the Roxana plant the list of refineries on the Great Lakes looks something like this, as of 1927, always barring the early announcement and rapid erection of additional plants not yet disclosed:

Company and plant location	Daily Capacity (bbls.)
Texas Company, Lockport	6,500
Joliet Refining Company, Joliet	1,000
Lemont Refining Company, Lemont	1,000
Inter-Ocean Refining Company, McCook	3,000
Red River Refining Company, Burnham	500
Argo Oil Company, Blue Island	3,000
Standard Oil of Indiana, Whiting	50,000
Sinclair Refining Co., E. Chicago	16,000
Consolidated Oil Ref. Co., E. Chicago	2,500
Roxana Petroleum Corp., Hammond	15,000
Craig Oil Company, Toledo	1,500
Paragon Refining Company, Toledo	10,000
Standard Oil of Ohio, Toledo	15,000
Sun Company, Toledo	5,000
Canfield Oil Company, Cleveland	2,000
Standard Oil of Ohio, Cleveland	11,000
Imperial Refineries, Sarnia	15,000
Imperial Refineries, Montreal	12,500
British-American Oil Co., Montreal	1,000
Cities Service Oil, Wallaceburg	2,000
Nations Oil Refineries, E. Montreal	4,000
Canadian Oil Companies, Ltd., Petrolia	2,500
Canadian Companies Ltd., Petrolia	2,000
Great Lakes Oil Ref. Co., Montreal	1,000

Gas Use May Be Determined by Three Committees

Tulsa, Okla.—After deliberations of some two weeks, the matter of providing regulations for the use of gas for building up pressure in oil wells in Osage County has been left to three committees, whose efforts are to be passed on at a general session sometime in April.

This question is of interest to natural gasoline manufacturers with plants in Osage County in that there is a possibility of using air in some instances, while the use of gas may involve provision of special equipment for the purpose.

The question came before the oil industry when members of the Osage Oil & Gas Lessees Association meeting in Tulsa in March listened to proposals for using gas and air for restoring pressure in some of the older fields of Osage County. Due to their particular interests, three group meetings were held. Gas lessees held for the ownership of gas rights, although they passed no resolution to that effect.

Gasoline manufacturers met and passed a resolution in which they recommended to the Department of the Interior through the Osage Indian Agency that use of gas or air for restoring pressure be allowed only after a hearing before the department and then only under the approval of the department.

Oil lessees, also laying claim to use of gas for restoring pressure, passed a resolution asking for regulations allowing the use of gas for such a purpose without any hearing and without regulations.

Then at a general meeting of all groups March 31, the resolution of oil lessees was amended to provide for administration of departmental regulations in the use of gas, with the provision of a hearing before allowing use of air or any other substance for restoring pressure.

This proposal by the oil lessees went to such length that representatives of other groups asked the privilege of naming steering committees, which are to study the oil lessees' proposals and see if some settlement of the differences can be made.

The steering committee representing Natural Gasoline Manufacturers is composed of John Kane, Phillips Petroleum Company, Bartlesville; S. S. Smith, Roxana Petroleum Corporation, Tulsa; E. L. Peck, Empire Gasoline Company and president of the Association of Natural Gasoline Manufacturers, Bartlesville; J. R. Freeman, Carter Oil Company, Tulsa; C. C. Herndon, Skelly Oil Company, Tulsa.

Gas lessees are represented by R. L. Gordon, Indian Territory Illuminating Oil Company, Bartlesville; W. C. Franklin, Tidal Oil Company, Tulsa; Frank Long, Sand Springs Home, Sand Springs; H. H. Montgomery, Empire Gasoline Company, Bartlesville; and G. G. Shallenberger, Kay County Gas Company, Ponca City.

Oil lessees have named the following committee: Rush Greenslade, Gypsy Oil Company, Tulsa; William N. Davis, Phillips Petroleum Company, Bartlesville; Burt Collins, Echo Oil Company, Tulsa; G. S. Rollin, Roxaaa Petroleum Corporation, Tulsa; and James A. Veasey, Carter Oil Company, Tulsa.

Gasoline manufacturers are not interested in ownership of gas for use in restoring pressure. That is between oil lessees and gas lessees. Gasoline manufacturers are interested in how gas shall be supplied to them and any part they may have to play in returning gas under pressure for use in the producing horizons.

Higher Freight Schedule Suspended by Examiner

Tulsa, Oklahoma—Suspension of a proposed schedule has retained a lower combination rail rate from Oklahoma and Kansas on petroleum products to Louisville, Kentucky. Examiner Shanafelt, meeting with refiners and railroad men in Tulsa, ordered the proposed schedule of 50 cents a hundred from this territory to Louisville held up until a decision comes from the Interstate Commerce Commission.

The present combination rate from Oklahoma and Kansas to Louisville is 43½ cents a hundred. This includes 1½ cents for transporting the product across the Ohio river at Louisville.

The higher schedule would have imposed an additional $40 a car on refined products out of Oklahoma and Kansas for the Louisville territory.

Cresylic Acid From Petroleum Distillates

By L. J. Catlin
Standard Oil Company, Kansas

IN THE process of refining petroleum distillates, primary consideration is always given to the problem of removing substances which are detrimental to the finished product from the standpoint of utility and salability to a public which has set up certain standards, more or less empirical, but none the less vital to the refiner in a day of competition for markets. The rapid increase in the use of cracking processes for the production of lighter distillates is likely to be revolutionary not only to the standards for judging market products, but also to the refining industry itself; and in the day of keen competition the margin of profit may lie in the value of by-products, or the elimination of waste, or the facility with which a product of low market value may be converted into one of higher value. The bare mention of conversion of products brings to the forefront all those classes of substances which are readily reactive, and which by that same token are readily removed from the more stable compounds which compose the bulk of the gasoline, kerosene, etc., which constitute the main products of manufacture.

At the time of the recent meeting of The American Association for the Advancement of Science the daily newspapers gave front page space to a statement made at that gathering concerning the value of diolefins wasted annually by the petroleum industry. Similar statements might be made concerning the olefins in still gases, and perhaps various other substances produced in small quantity in the refining process. In the past three or four years many of the hitherto obscure reactions of the treating process have been brought to light and with a more definite knowledge of the identity of these impurities it is quite conceivable that the day may not be far hence when the treatment of petroleum distillates may be viewed from the standpoint of salvaging valuable products rather than as a necessary evil.

Method of Extraction

The presence of cresols and phenol in cracked distillates was demonstrated by Brooks and Parker. (Ind. & Eng. Chem. Vol. 16, No. 6, 1924). In the summer of 1924 a study of the marketability of cresylic acid from pressure still distillate was made at this place, and while small quantity production and excessive freight charges to possible cutomers preclude this possibility at present, it is thought that some of the data gathered at that time might be of interest to others working along similar lines.

The method of extraction was that mentioned in the article referred to, that is by washing with caustic soda before the acid treatment and precipitating the oil containing the cresylic acid from the caustic solution by neutralizing the caustic. This neutralizing may be accomplished with hydrogen sulfide as well as any other acid, and hence by using the caustic after it is spent for oil washing, to scrub still gases previous to absorption. The resulting sodium sulphide is also recoverable.

The oil thus recovered was distilled in an Engler flask up to 450 degrees F. and 10 per cent fractions separated for further examination beginning at 383 degrees F. Previous to the 383 degrees cut came 10 per cent water and 50 per cent mixed water and oil. Since cresols were the principal object of the search the fractions between 383 degrees and 401 degrees and between 401 degrees and 410 degrees were tested for specific gravity, showing .9951 and 1.0052 respectively, thus showing the absence of orthometa-, and para-cresols, whose specific gravities are 1.0511, 1.039, and 1.039 respectively. Further data on this run are shown in Table I. All fractions, however, responded affirmatively to tests with ammonium hydroxide, petroleum spirit, and glycerol for cresylic acid, as outlined by Allen. (Allen's Commercial Organic Analysis, Vol. III.)

TABLE I.

Sample run, 500 cc. Engler flask, no beads.
Specific Gravity, 1.058
Water 10 per cent.
At 383 F. 15 per cent off water and oil.

		Sp. Gr. Fraction
401	25	.9951
410	35	1.0052
414	45	
426	55	
439	65	1.0262
440	75	1.0270
450	82	

Average Specific Gravity 383-440 1.0134

Another distillation was made and the composite sample from 383 degrees to 440 degrees F. was re-run in a 100 cc. Engler flask in comparison with commercial samples of the following: Cresols U.S.P., Cresylic acid 97 per cent grade, and Cresylic acid 95 per cent grade. Comparative results are shown in Table II.

TABLE II.

	Cresol U. S. P.	97% Acid	95% Acid	Petroleum Acid
Sp. Gr. 60/60	1.033	1.032	1.030	1.0057
Sulphur	0.0	.098	.033	.47
Water per cent	.5	2.0	2.0	1.0
Distillation per cent off				
5	382°F.	386°F.	385°F.	401°F.
10	382.5	387	388	402
20	383	389	392	404
30	384	390	394	408
40	384.5	391	396	410
50	384.5	392	401	412
60	385	394	405	415
70	385.5	396	412	420
80	386	400	423	425
85				430
90	387	407	448	
95	388	418	474	

In scanning through tables showing properties of organic compounds we find methyl phenyl carbinol (K), $CH_3(C_6H_5)CHOH$, having a specific gravity of 1.003 and boiling point 393-401 F. which fits well the properties of the sample here tested.

Samples similar to the one reported in Table II were sent to various commercial companies dealing in coal tar products one of whom reported it as containing "87% of tar acids of rather high boiling character," and another spoke of it as having "a very strong pungent odor which might be compared to that of a mixture of cresol and mercaptan products."

As to the quantity it was found that pressure distillate from Burton-Clark stills yields in the neighborhood of .00678% by volume of the grade described in Table II.

A feature not to be overlooked in the recovery of this material is that it is one of the most odious forms of sewage to be emptied into small streams or near city water supplies in large bodies of water.

Proper Design and Operation of Heat Exchangers

By F. L. Kallam, M. E. and A. F. Semino

Production of heat is the most costly single item in petroleum heating. Conservation of heat, once produced, offers opportunity for perhaps the greatest saving in the operation of a refinery or natural gasoline plant.

That is the reason for the development of the heat exchanger in refining circles in the last five years. This development, however, has been haphazard almost as often as it has been scientific.

In this paper Messrs. Kallam and Semino are presenting a treatise on heat conservation in petroleum refining. When completed it will be the most thorough work written on the subject, as restricted to refining.

The series was begun in March and will require three or four issues for completion, after which it will be put in book form.—The Editor.

The Shape Factor—With progressive lengths of a heating surface, we find a gradual falling off in the temperature and pressure of the fluid. Consequently the diameter and length of the tubular heating surface has an appreciable influence upon the amount of heat transferred.

Small tube diameter, aided by turbulent flow, compels a greater number of molecules of the liquid to come in contact with the tube surface than would be the case with tubes of large diameters.

The temperature of a hot fluid flowing through a long tube decreases with each increment of the tube length. This means that the temperature difference, or temperature head, between the fluid and the tube surface also decreases with the length of the tube. Inasmuch as the transfer varies directly as the temperature gradient, it is readily seen that the ends of long tubes are very much less operative than the entering portions.

From this we can conclude that the average heat transfer rate per unit varies inversely as the linear dimensions of the heating surface and the diameter of the tube. In fact, some authors contend that the transfer coefficient K varies inversely as the square root of the product of the diameter and length of the heating surface. Hence many heat transfer formulas include a factor, sometimes called the "shape factor," which is introduced purposely to take care of the dimensional characteristics of the exchanger under consideration.

It is evident that tubes of small diameter and of relatively short lengths should be used in all exchangers. That is to say, instead of one long tube, it is much better to use a great many shorter tubes in parallel. The length of the tube should not exceed 300 times the diameter.

Generally speaking, in the case of stream-line flow, the effect of the shape factor is not so marked. This is largely due to the fact that the flow is telescopic, in which case the heat transfer is practically governed by the conductivities of the fluids.

The shape factor, as usually discussed, deals mainly with the flow within the tubes, and neglects the tube spacing entirely. This is obviously an error, for by closely spacing the tubes, the liquid in the shell is forced into turbulent flow, whereas with wide spacing, this effect is not so pronounced. Disregarding the turbulence effect, close spacing of the tubes tends to break up the liquid and assures more particles coming in contact with the heating surface. This promotes greater transfer, inasmuch as the thickness of the liquid surrounding the tube is materially decreased. The distance between tube surfaces should never exceed one-half the internal diameter of the tubes, with closer spacing recommended.

The Roughness and Cleanliness Factor—The heat transfer rate is greatly affected by the roughness and cleanliness of the heating surface. Consequently, in practically all equations covering heat transfer, a factor is introduced to care for the roughness of the pipe, and in many cases this factor also includes the cleanliness of the surface. This is necessary, as almost all formulas are the direct results of laboratory work with smooth pipes, such as brass or drawn steel tubes. Hence these derivations are typical of ideal conditions which are not experienced in actual practice. In fact, the deviation has been found to vary from ⅛ to ½ in commercial practice; that is to say, ⅛ to ½ as much heat is transferred as could be expected in an ideal case.

Many oils undergo certain internal or physical changes, which are probably the results of having been subjected to periodic variation in temperature and pressure. In cases where steam is introduced into the oil as a heating agent, emulsions will also be formed. Invariably, on all exchanger surfaces, especially on the tube exteriors, a wax-like substance, which has the consistency of vaseline, but which is somewhat darker in color, will be deposited. Figure No. 3 gives an idea of this phenomenon. Here the heating element, although consisting of numerous tubes, appears as one single element because of this wax which has accumulated around the tubes. This particular exchanger had been in service for over a year without cleaning. The formaiton of wax takes place in all designs of exchangers if the oil temperatures are moderate and the velocity is low. As a result, the outsides of the tubes are generally the parts affected. The characteristics of the oil have a great deal to do with this accumulation, for some oils tend towards this formation more than others.

Where trouble of this kind is experienced, it will generally be found that the waxy deposits are to a certain extent soluble in very hot oil, so that the exchanger may be cleaned by simply flushing with the heated oil. Even where it is possible to remove the tube bundle, it will be found that cleaning is difficult. Some success can be attained by nozzling steam into and around the tubes.

The importance of cleanliness will be demonstrated with an example of an oil exchanger which had been in service for several months. Solving for the transfer coefficient, a value of 10.4 was obtained. This same exchanger was then cleaned and put back in service. With all conditions the same for both tests, such as kind of oil, rate of flow, temperature range, etc., a coefficient of 12.6 was obtained after cleaning.

A second case is taken from actual practice. Two exchangers were operated

NOMENCLATURE

A =Mean effective transfer area—Square feet.
c =Specific heat of fluid—B.t.u. per pound per °F.
c_T =Specific heat of hot fluid—B.t.u. per pound per °F.
c_t =Specific heat of cold fluid—B.t.u. per pound per °F.
C =Coefficient of fluid friction loss depending upon W, D_1 and U.
D_1 =Internal diameter of tube—Inches.
D_2 =Shape factor—Inches.
d =Density of fluid—Pounds per cubic foot.
E =Efficiency of heat transfer—Per cent.
F =Crtical velocity factor depending upon V_s, D_1, S and U.
$J = \frac{W_T c_T}{W_t c_t}$ or $\frac{W_t c_t}{W_T c_T}$ (whichever is less than 1.)
k =Overall coefficient of conductivity.
k_e =Coefficient of conductivity of internal liquid film.
k_H =Coefficient of conductivity of external liquid film.
k_T =Coefficient of conductivity of metallic tube wall.
K =Overall heat transfer coefficient—B.t.u./Hr./Sq. ft_s/°F.

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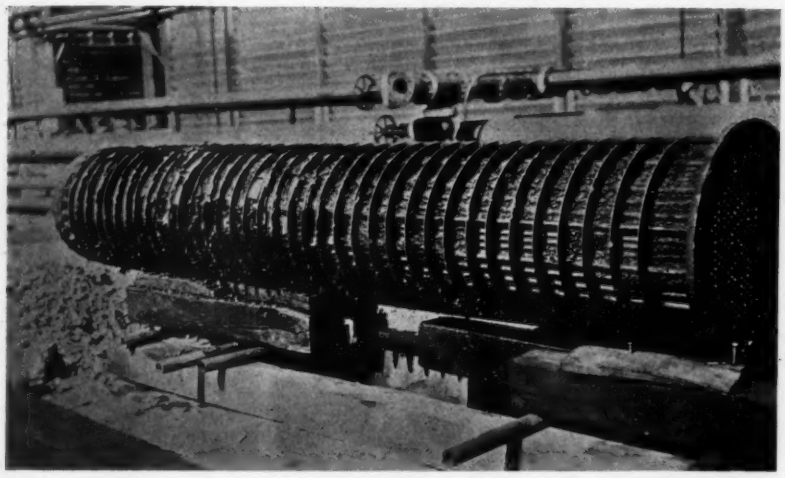

FIGURE 3.
Accumulation of Waxy deposits on tube bundle

in series over a period of approximately seven months without cleaning. However, during this period the oil was renewed three times. The results of the series of tests taken with these exchangers are shown graphically in Figure No. 4. It can readily be seen that there is an appreciable falling off in the value of K with length of service, showing the effect of the gradual accumulation of foreign matter upon the heating service, which even new oil could not counteract. The average absorption plant operator probably changes oil once a year, if ever, and the reader may draw his own conclusions as to the efficiency of transfer obtained over this period. Routine viscosity tests should be run to check the condition of the oil being circulated.

The authors concede that the inclusion of a roughness coefficient in heat transfer analysis is logical. The value of this coefficient will be constant for any piece of apparatus under all conditions, and will show the loss in heat interchange between the standard case and the actual case. Now the roughness or unevenness of the transfer surface will affect the transfer only up to a certain point, that point being where the incrustations from the dirt deposits completey fill up the minute crevices in the surface. From this point on, heat transfer is further impaired by the accumulation of this deposited film, which condition calls for another factor, the cleanliness coefficient. It has been shown above that the cleanliness of a surface depends upon length of service and the properties of the oil: that it is not constant, even for any one particular piece of apparatus. Hence, any combination of the roughness and cleanliness coefficients is impracticable.

Pressure Drops—Pressure loss through a piece of apparatus varies approximately as the square of the velocity and directly as the viscosity of the fluid flowing. Heat transfer varies directly as the velocity of flow and inversely as the viscosity of the fluid. Consequently, friction drop and heat transfer are analogous, in that the latter may be estimated from data concerning the former. However, at this time, little information is available upon this phase of the problem.

Vaporization—It is quite apparent that 100 per cent heat transfer cannot be obtained, that is to say, all the heat given up by the oil being cooled will not appear in the oil being heated. Consider the case of a hot oil in the shell of an exchanger. Here the greater portion of the heat is transferred through the metal surface into the cold oil, raising its temperature. Now the difference in heat released by one oil and received by the other may be charged to two accounts. One is radiation, or that heat lost by conduction through the exchanger body and then radiated into the surrounding air; and the other, that heat which goes to liberate light hydro-carbon vapors from the cold oil. This latter heat has passed through the heating surface of the exchanger and into the body of the cold oil without increasing its temperature. It is merely the heat of vaporization which is necessary to distill the light fraction from the oil. This heat may in some cases amount to as high as 10 per cent of the total lost by the hot oil.

Vaporization of the oil, as has been discussed before, greatly reduces the heat transferred for the reason that it diminishes the effectualness of the heating surface. It is, moreover, a difficult factor to overcome, and in practice, the best solution is to equip the exchanger, both the tubes and shell, with vapor relief traps. These permit the vapors to escape from the exchanger without loss of liquid or pressure head. It has also been noticed that when so installed the traps operate continuously, showing that vaporization is taking place at all times. The removal of these vapors results in a remarkable improvement in the heat transferred.

Physical Characteristics of the Fluids Affecting Heat Transfer

Viscosity of the Fluids—It has been previously shown that the greatest resistance to heat flow is that of the relatively stationary film along the metallic transfer surface. The governing factor producing this film is probably the viscosity of the fluid; for this more than anything else determines the film thickness. This, of course, controls the heat passage, inasmuch as conductivity varies inversely as the thickness of the film. Viscosity pertains to the internal resistance to motion, or to the internal molecular friction within the liquid itself. To secure a thin film, the liquid must have such properties as will permit one stratum to break away readily from another, or it must offer little resistance to a shearing action. Low viscosity liquids have these properties. When this shearing resistance is small, the liquid film retained upon the tube wall is thin; when the shearing resistance is large, liquid film is thick. In general, the affinity between a metallic surface and a liquid is greater than between the molecules of the liquid, hence in flowing, the liquid shears at the weakest point, leaving a film adhering to the wall. Mercury, on the other hand, has greater affinity between its own molecules, leaving no film on a metal surface.

High viscosity fluids, (inasmuch as internal movement is resisted), do not permit the molecules to diffuse to such an extent as would be true in the case of a low viscosity fluid. In other words, their action and movements are restrained, and their energy is expended in overcoming the internal resistance rather than in producing molecular motion. This fact necessarily limits convection to a certain extent in a high viscosity liquid, and hence it is far more difficult to transmit the heat.

These facts are illustrated by the case of a unit consisting of several exchangers connected in series. Factors, such as quantity of oil, heating surface, etc., are identical for each exchanger. Yet the amount of heat transferred per exchanger will not be the same. The only variable present will be the temperatures (with corresponding viscosity), and in every case the highest efficiency of transfer will be obtained in the exchanger handling the hottest oil. This is due to the fact that in this ex-

L = Thickness of fluid film—Feet.
M = Hourly equipment charge per B.t.u.—Dollars.
N = Cost of recovering one B.t.u.—Dollars.
O = Time—Hours.
P = Pressure drop through pipe—Pounds/Sq. in. per foot of length.
q = Total heat transferred from body of hot oil to body of cold oil.
q_e = Total heat transferred through film on inside of tube.
q_H = Total heat transferred through film on outside of tube.
q_T = Total heat transferred through metal tube wall.
Q = Total heat transferred in heat exchanger—B.t.u./Hr./Sq. ft./°F.
R = Total resistance to flow of heat = $R_e + R_H + R_T$.
R_e = Internal liquid film resistance to flow of heat.
R_H = External liquid film resistance to flow of heat.
R_T = Metallic resistance to flow of heat.
s = Viscosity—Saybolt Seconds.
S = Specific gravity of fluid—Water = 1.
t_1 = Temperature of fat (cold) oil entering—°F.

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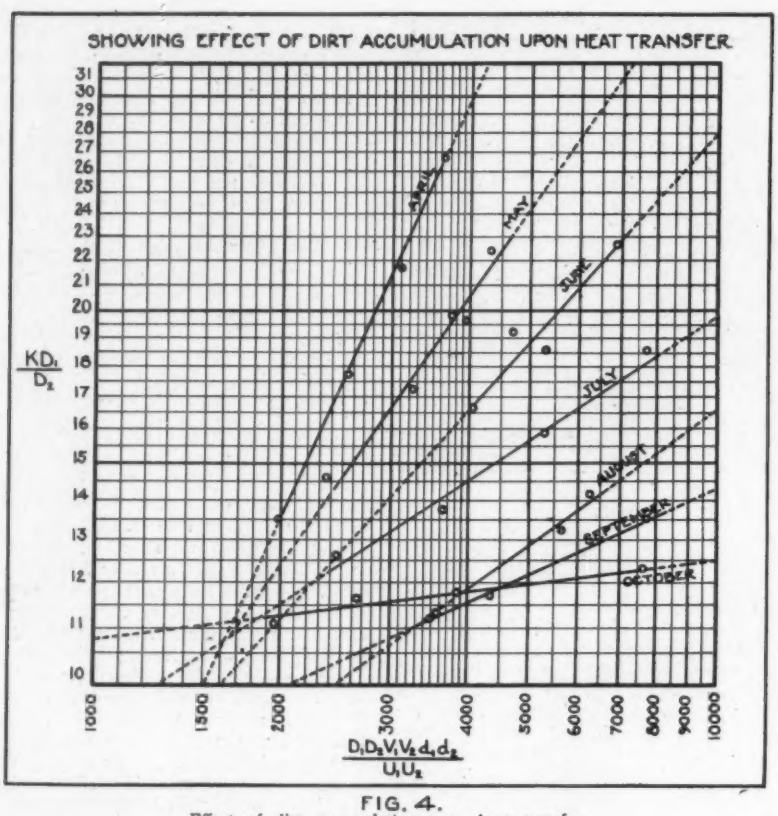


FIG. 4.
Effect of dirt accumulation upon heat transfer

changer the oil will have the lowest viscosity, since the viscosity varies inversely as some function of the temperature.

Conductivity of Fluids—Liquids flowing in contact with metallic walls leave a fluid film adhering to the surface, the thickness of which is governed by numerous factors, of which velocity is one. It is doubtful whether this film could be removed from the surface even with an excessively high velocity.

Thermal conductivity is defined as the quantity of heat that passes by internal radition, conduction and convection through unit cross-sectional area of a substance of unit thickness, at unit thermal potential difference, in unit time. Knowing the specific thermal conductivity of the fluid, one can readily calculate the heat passing through any liquid film from:

$$Q=\frac{kA(T_r-T_s)}{L}$$

where Q=B. t. u. transferred per hour.
k=Specific thermal conductivity in B. t. u./Sq.Ft./°F./Ft. thickness/Hr.
A=Effective cross-sectional area in Sq. Ft.
T_r=Temperature of one surface of film in °F.
T_s=Temperature of opposite surface of film in °F.
L=Thickness of film in feet.

The thermal conductivity k of an oil varies as the product of its specific heat and specific gravity. Consequently if the specific heat rises rapidly with increased temperature while the specific gravity is decreasing, k will increase. However, if the specific heat does not change rapidly with increased temperature, k will decrease. From this it can be seen that k will be slightly affected by temperature because of the opposite change of the specific heat and specific gravity with temperature. The fact that little information is available on the conductivity of oil warrants the use of the over all coefficient method in heat transfer analysis. Table No. 1 gives values of the thermal conductivity of several petroleum products.

TABLE NO. 1
Thermal Conductivity of Petroleum Products

Product	Temperature Range °F.	k B.t.tu./Hr./Sq.Ft./Ft./°F.	Authority
Illuminating oil	55	0.086	Graetz
Kaiser Oil	32 to 92	0.093	R. Weber
Paraffin Oil	32 to 92	0.084	R. Weber
Cylinder Oil	162 to 194	0.070	R. Weber

Density of the Fluid—Reviewing what has already been said with reference to flowing fluids, we can see how they possess the ability to change from one state of stable motion to another, the point of change being the critical velocity. We may now consider the density of a fluid insofar as it affects the amount of heat transferred. Since the critical velocity is directly proportional to the kinematic viscosity, we may say that heat transfer varies in the same manner. Let us consider the case of two oils having the same viscosity but different densities. The critical velocity for the denser oil will be the lower of the two, so we may say that heat transfer varies as the density. However, in actual practice, it is found that the denser oils possess correspondingly greater viscosities, so that the critical velocity becomes large. An effort to exceed these velocities, in order to reach turbulent flow, would involve very high pumping pressures and excessive pressure losses due to friction.

Specific Heat of the Fluid—The specific heat of the fluid is a measure of the total heat available for transfer from one fluid to another. Recent experiments have shown that the specific heat of oils varies directly as some function of the temperature. Because of lack of complete information on this subject, it is a general practice to assume a mean value of 0:5 B. t. u. per pound per degree F. for the specific heat. Late experiments have shown that the specific heat may vary from 0.3 to 0.8 for a temperature range of 0 to 500 degrees F. Care must be exercised, therefore, in selecting the proper value for the specific heat. It may be assumed that the heat transferred will vary as some function of the specific heat, which in turn varies as the temperature. However, this phase of the work is far from complete, so that it is impossible to arrive at any specific conclusions.

To Be Continued Next Issue

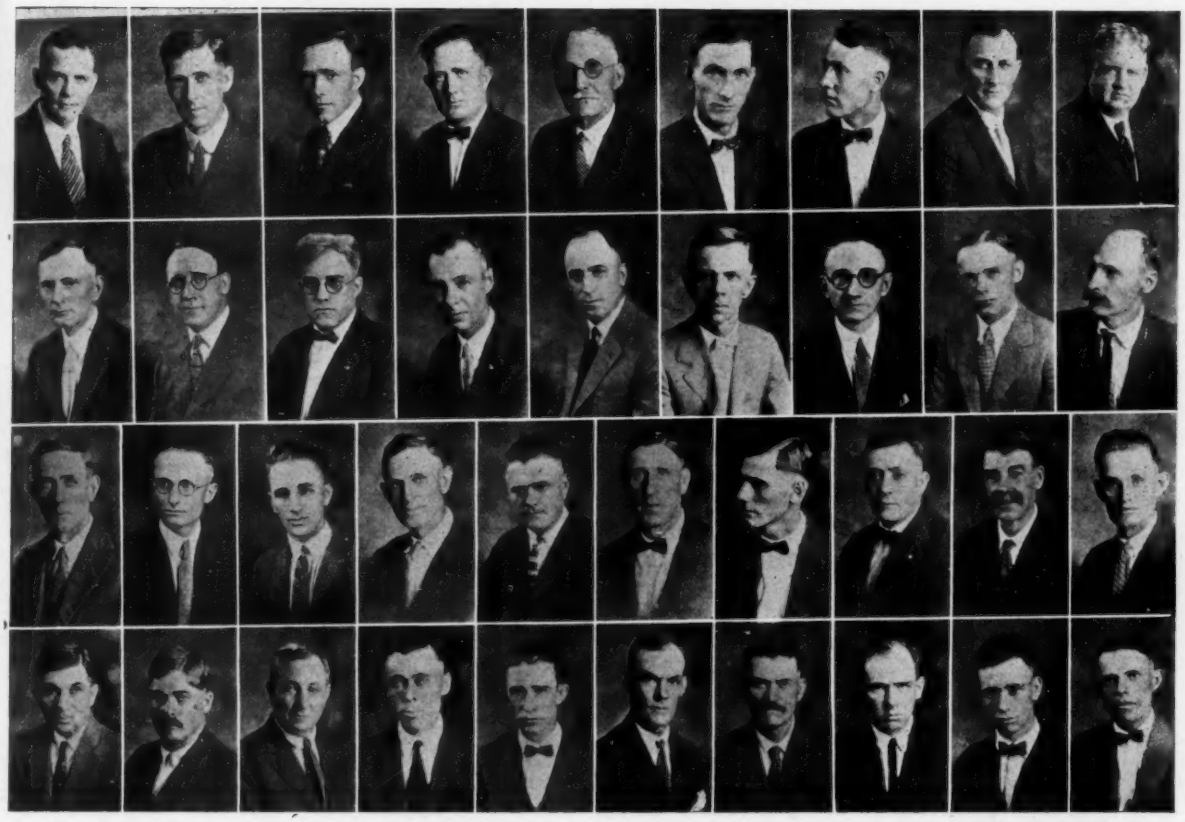
Largest Carbon Plant For Amarillo District

Amarillo, Texas.—Construction work on the largest carbon black plant in Texas will be started in the Panhandle district early in April by the Western Carbon Company, which has been assigned the state permit granted several months ago to the Phillips Petroleum Company. This plant will burn residue gas from the natural gasoline plants operated by the Phillips Petroleum Company in Carson and Hutchinson Counties, and will be equipped to burn 50,000,000 cubic feet of gas daily. H. H. Reardon is general superintendent for the Western Carbon Company.

A five year lease, with the privilege of renewing same, has been taken on a 68 acre tract by the Western Carbon Company from the Burnett Estate in the east half of section 127, block 5, straddling the Carson - Hutchinson County line. The Panhandle district plant will be in five units. An unusual expense will be involved in the construction of the plant, since it is located approximately 25 miles from Panhandle, the nearest railroad point.

Marland Entering Texas

Fort Worth, Texas.—The Marland Refining Company has established a district office on the 19th floor W. T. Waggoner Building, Fort Worth, to enter the natural gasoline manufacturing field in Texas. John E. Jones has been placed in charge of Texas operations, and gas testing crews are engaged in selecting prospective plant locations, while Marland's first plant will probably be located in the Cook Ranch shallow oil and gas field, Shackelford County.



The Deep Rock Foreman's Club which helps to keep things running smoothly at the Shaffer Oil Refining Company's plant. The box at the bottom of the page will tell you who they are.

Taking Off the Rough Spots With a Club

By Grady Triplett

THE rough spots are those likely to be found in any organization, which grows. In the case of a refinery, the plant is small at first. The superintendent and one assistant direct all work. Later there is a second assistant. But the plant and the working force are so small that conditions do not allow friction. Men see each other frequently. When one man wants something done in another department, he can see about it.

But growth changes all this. Finally the refinery becomes a huge affair. The working force grows accordingly. Instead of a superintendent with two or three assistants for directing work, there are foremen, a dozen or a score of them. Each has his little world of work.

How It Starts

In the course of a day he may not see three other foremen. If he should get some work from the department of another foremen, he wonders when it does not come through on time. Press of work and distance make it impossible for him to see about the work himself.

In such there is chance for friction. One man fails to get what he considers proper co-operation, so he fails to give it.

There is no reason for singling out a refinery as a place for such. It may happen and does happen in universities, banks, and governments. Such conditions arise wherever great numbers contribute individual parts to one great work.

On the other hand, really there is one reason for singling out a refinery as a place where such conditions arise, for there is a refinery, where a method has been found for preventing such friction.

The Shaffer Club

The plant is that of the Shaffer Oil & Refining Company at Cushing, Oklahoma.

The club is a band of foreman, rather than an instrument to be wielded by a pair of brawny hands. The organization is known as the Deep Rock Foreman's Club. The 38 foremen of the Cushing plant are members. They meet once a week in the refinery office. The one hour of this meeting gives them contact their work does not allow.

That one hour and what transpires there, takes away the rough spots that might otherwise mar harmony.

Contrary to what the first part of this article may imply, the Deep Rock Foreman's Club was not formed because of friction among workmen. Its need along that line was not known until its work had been accomplished. Executives of the plant were not aware of any need for giving the foremen a chance, to meet

Members of the Deep Rock Foreman's Club shown in the picture at the top of the page are as follows:

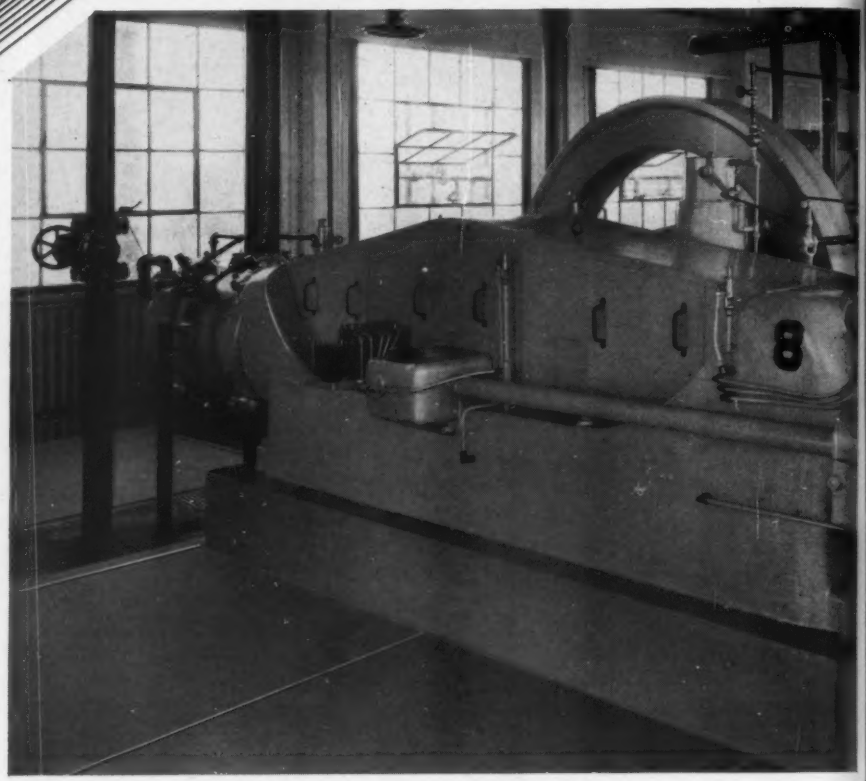
First row: David Hunt, Jess W. Rafferty, Henry Hogrefe, W. B. Williams, Robt. L. Campbell, A. D. Cornett, O. E. McLean, John A. Anderson, Thos. L. Galagher.

Second row: C. V. Kispaugh, M. J. Surface, P. C. VanGilst, George B. Merry, W. E. Moody, George Walterhausen, Bert C. Frichot, Robert Davis, John T. Knight.

Third Row: L. G. King, John Florence, R. A. Berndt, Clarence Sullivan, L. A. Coberg, William T. Coffey, Herman Miksch, Phil E. Myers, Patrick Boyle, Worley Flint.

Fourth Row: Charles Ray, John W. Dickey, Lycurgus C. Fleshman, Grover E. Wells, John Morton, Isaac Gabbard, Morris Harper, Floyd E. Sorrels, Joe R. Greenlee, James P. Baker.

COOPER



The Gasoline Production at

Sinclair Oil Chooses "Coopers" for

The photograph shows the nine Cooper twin type 80 engines direct driving Cooper compressors; also, at the far end, two Cooper single type 80 engines with belt pulleys driving a line shaft for auxiliary power. One of these auxiliary units is equipped with a direct connected compressor and can be used to pump gas when not required for auxiliary power.

THE C. & G. COOPER CO.,

1605 Kirby Building, Dallas
317 Bank of Italy

ENGINES

this Plant Tells the Story

Gasoline Plant in Cromwell Pool

In design and construction detail, this plant is an outstanding credit to the Engineering Department of the Sinclair Company and indirectly to the whole Sinclair organization.

Cooper engines have already demonstrated in hundreds of installations their ability to measure up to such confidence as the Sinclair Company has expressed.

MOUNT VERNON, OHIO

504 Kennedy Building, Tulsa
Building, Los Angeles

and talk over common plant problems. Now it is evident the club has accomplished something along the lines of co-operation.

One Hour a Week

It may have been that the foreman's club was formed because there was no evidence of the need of a method to remove friction. Certainly it was not formed for the purpose of decreasing labor turnover among foremen. Some men in foremen positions have been with the Shaffer plant since its first still was fired in 1912, the year the great Cushing oil field gave up its first oil. Service of three, four and five years is common among foremen.

Regardless of purpose, the Deep Rock Foreman's club was organized a year ago. Its first purpose is to have a weekly meeting of foremen. The 38 men holding such positions assemble at 1 o'clock in the refinery office. W. E. Moody, plant superintendent and his assistants, attend the session. But Mr. Moody does not hold office in the club. It is purely a foreman's affair.

In one hour the effort is made to talk over every plant problem that involves the work of two departments. Where something is known of the problem, a program is followed. But any foreman can arise and tell what he would like to have done, in order that his department will function better.

If his desires involve co-operation from some other department or departments, the foremen of these may explain how they can give the needed co-operation.

Such is one part of a meeting of the Deep Rock Foreman's Club. There is nothing startling about it. Yet W. E. Moody, the superintendent, is authority for the statement that the weekly meetings have accomplished something of value in the plant.

"It is impossible," he said, "to single out instances, but I know the workings of the club have made for better co-operation in the plant. The foremen understand each other better. They meet oftener. Then they meet without the stress of work. The time for meeting is short but each man is off duty. He can sit down and explain his position and listen to what his fellow foremen have to say.

"The one hour a week spent in the meeting of the club is time profitably employed."

But the Deep Rock Foreman's Club has activities outside of the regular weekly meetings. Its activities are spreading to the whole plant. Last year there was a plant picnic, sponsored by the Deep Rock Foreman's Club. The workmen and their families were invited and made a merry day of it.

They Eat Frequently

During the winter, the club held two banquets in Cushing. These were club affairs. At other times there were smokers, which drew attendance from the plant workmen. Christmas is a season for one of the gatherings.

The Shaffer plant is a complete refinery, with daily capacity of 10,000 barrels. Its employes live near the plant and in Cushing. Many of them own homes. Long service is so common in the plant that its men are looked upon as citizens of the community rather than itinerant workers, so common to the oil fields.

Aside from the foreman's organization, there is another composed of all employes of the plant. It is known as the Deep Rock Mutual Aid Association. Through an assessment against each member, funds are provided to take care of members in case of accident or illness.

Number 5—The Vapor Circuit

By Otto Peters
General Superintendent Hanlon Gasoline Company

In the packing industry they boast of losing only the squeal in the butchering of a hog.

The Natural Gasoline industry cuts into the squeal, so to speak, by the control of vapors.

All vapor cannot be saved. But economy in the oil industry has no better example than that practiced in the natural gasoline plants where the vapors are controlled and converted into gasoline.

—The Editor.

As this is our vapor circuit let us study the source of vapors and the constituents found in vapor gas. Apparently gas is vapor, it is good to differentiate between a vapor and a gas but we must keep in mind the conditions that bring about the difference. As we try to define vapor we realize how complex, how interesting it all is to extract gasoline from the gas.

In the compression plant, vapors were usually taken off the storage tanks and handled by the low stage compressors in connection with the field gas. Vapors from the tank cars while being loaded are allowed to escape as a means of weathering the product for shipment, although where loading losses are excessive efforts are made to reclaim the vapors and in some cases separate units are installed to handle these vapors, calling them vapor reclamation units. In circuit No. 2 we had in mind that the piping of the intake gas header to the low stage compressor should provide flexibility of engine operation, so that with control gates properly placed the compressors handling the field gas could be switched to handle the excess vapor load.

Higher Pressure Better

It develops that best results are obtained by compressing the vapors at a higher pressure than the pressure on the low stage compressor. Assuming the low stage compression to be between 30 to 50 pounds gauge pressure, the compression applied to the vapors would be from 50 to 80 pounds gauge pressure and it is noticed the vapor product volume increases and decreases according to the pressure maintained. It follows then that the quality of the product varies with the pressure so that the pressure desired is determined by the grade of product needed. Knowing then that vapor handling is affected by pressure regulation the importance of the pressure gauge being accurate is apparent because inaccurate pressure gauges are not only dangerous but they also hinder intelligent operation. It sometimes happens that due to the richness of the vapor gas condensation takes place in the compressor and where the gasoline may interfere with lubrication of the compressor cylinder the trouble may in one way be avoided by regulating the temperature of the compressor cooling water.

In weathering a product one must keep in mind the object desired. Experience shows that the manner of weathering has a bearing on the result. A product can be weathered by open storage, or by agitation, or by steam coils which not only raises the temperature of the product but also takes the form of agitation. Open storage weathering is against atmospheric pressure, while steaming may create weathering against pressure. In weathering a product the change is demonstrated by lower gravity, lower vapor tension, increased recovery and perhaps a slight raise in end point. Weathering a product to meet shipping specifications creates a loss although it appears that the vapors are reclaimed and converted into production again. One important problem is to cut down loading losses and this can be helped by the care taken in making distillation tests on the plant product, having in mind that the loader is governed in making his blends according to the report of the distillation sheet. In making a distillation test, the temperatures, rate of distillation, and end point determinations are of utmost importance, great responsibility rests on the distillation record, great harm lies in routine familiarity.

Watch the Circuit

We must watch this vapor circuit carefully, the regulation of pressures and temperatures is very important and that which harms vapor makes the most is an air leak in that part of the circuit which is under vacuum. It is just as important to test for air in the vapor circuit as it is to test for air in the field gas.

No costly Shut-downs when you use forged flanges

JUST when everything is running along smoothly and production is at its peak—a flange gives way and a leak starts.

Immediately the power is shut off and all work ceases. The maintenance men are called out and hours are wasted taking down a section of pipe and installing new flanges.

Isn't it better to spend a little more at the beginning and avoid this condition? Many manufacturers think so. That's why forged steel flanges are becoming more popular every day.

Pennsylvania Forge flanges insure your pipe line against expensive tie-ups. They are made of specially selected open-hearth steel and have a tensile strength of 60,000 pounds per square inch. The average tensile strength of cast-iron flanges is 22,500 pounds per square inch.

Expansion, contraction, vibration, water hammer—none of these affect Pennsylvania Forge flanges. They have as much ductility as the pipe itself.

Often flanges are broken in installation. Not so with Pennsylvania Forge flanges. You can pull up the bolts as tight as you please without injuring the flange.

The installing of Pennsylvania Forge flanges represents real economy in plant management.

Write us your requirements and let us show you how to economize.

Do you want this authoritative data book free? Write for your copy today.

The strength of the line is only the strength of the Flanges

PENNSYLVANIA FORGE CO.

PHILADELPHIA

Texas Branch: Harrisburg Pipe & Pipe Bending Co., Houston, Texas. Carries full stock of flanges.

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Holmes-Manley Process Operates At Low Cost

Texas Company process described in paper prepared for A. I. M. & M. E. meeting in New York

By R. C. Holmes
President The Texas Company

WHILE the Attorney-General of the United States is pursuing his suit against a large group of the oil refiners because of the actions of some of the owners of cracking patents and equipment in settling their differences and proceedings with the business of converting gas oil and fuel oil (for which coal can, when necessary, be substituted) into gasoline, and some of the states are about to exterminate some of the companies by taxation, the President's Oil Conservation Board continues its study and deliberations in attempting to determine how to conserve oil resources, improve and secure better and more economical conditions and operations in the industry, and are apparently inclined to give constructive aid where possible.

Probably no industry in the United States is more highly competitive than the oil business. In addition to the indeterminable number of producers, there are upwards of 3000 jobbers and marketers of petroleum products and, according to Government reports over 500 companies manufacturing petroleum products. It can properly be assumed that the management of most of these are fairly capable and are desirous of securing the best commercial and economical results, as is the case generally with other established American industries.

None of these companies or individual interests is likely to give to the others without fair compensation, that which they have acquired, either by development or purchase, and it is not to be assumed that any expect developed processes to be turned over to them gratis any more than that it is expected that a company be given its crude oil requirements without compensation.

Constantly Improving

Most of the units of the industry that are successful or deserving of success are constantly, both of necessity and as good business policy, directing their efforts to the end of improving processes and practices, whether in producing, transportation, manufacturing or marketing.

Gasoline was in little demand and of little value until the use of the gasoline stove became general. There was no need or demand for more than the natural yields from the crude oil until the advent of the automobile with the internal combustion engine. With this development under way, it became evident that a substitute for gasoline or a more effective method of converting some of the less valuable fractions of petroleum into gasoline, would be needed to fill the increasing demands. The Texas Company was early among those actively carrying on research and development work to this end.

Coincident with the development work, the cost of equipment, cost of operation and patent protection have all had due consideration and attention.

Carbon Serious

Because of the serious operating difficulties resulting from the formation of carbon in pressure cracking units, special efforts have been made, first to prevent excessive accumulation of carbon on the heated surface of the equipment, and, second, to devise and design equipment which would effect the decomposition with a minimum amount of carbon formation and damage to the equipment by excessive temperatures.

No refinery installations can be so productive of heavy losses or of large profits as cracking installations. Almost any other equipment can be economically used for varying conditions of oil refining, but cracking equipment is inevitably expensive and suitable for the one purpose only. To justify the investment expenditure, it must be productive of satisfactory yields of good quality gasoline and at satisfactory costs. To accomplish the latter, it must be capable of almost continuous operation.

A cracking unit is not an economical gas or coke plant, therefore, it is highly desirably that the design of the equipment and method of operating be such as to produce not only the maximum yield of gasoline but also the remainder of the products, so far as possible, in liquid and merchantable form. Refinery coke of the character that comes from any pressure still operation, as practically every refiner knows, is not a very readily marketable product, nor a product that ordinarily can be economically consumed as fuel in the refinery as compared with fuel oil. If stored in any considerable quantity it is very difficult to prevent spontaneous combustion and the entire destruction of the accumulation. If there are any places where petroleum coke is marketable at greater profit than fuel oil, thereby justifying its production, a better grade can be made at less cost in the regular coke still construction without pressure.

Holmes-Manley Process

In the Holmes-Manley process of The Texas Company the desired results, we believe, are accomplished in a most satisfactory degree. In any event, the proof of a process is in the performance.

The Holmes-Manley apparatus most generally in use comprises a pre-heater coil, of the series type, in which the oil is raised to a full cracking temperature; four vertical stills, into which the oil discharges; a bubble tower type of dephlegmator, which receives the vapor from the stills; a reflux condenser, to which the vapors pass from the top of the bubble tower; a water cooled condenser, which receives vapors from the reflux condenser; a surge pump, or jet pump, which returns the clean, heavy condensate from the bottom of the bubble tower and forces it into the stills through a pre-heating coil; expansion drums, into which the bottoms, or residue, from the stills are drawn and distilled largely by contained heat; and a condenser coil for condensing the vapors from the expansion drums.

The oil traverses the heating coil so rapidly that while it is heated to full cracking temperature — approximately 800 degrees Fahrenheit (not high enough, however, to damage the coil) —there is no substantial decomposition of the oil in the coil, and hence carbon trouble here is avoided.

Oil is maintained at an approximately even level in the vertical stills, which are set in a furnace with the ends projecting above and below the furnace, and heat is applied to the walls, within the furnace.

Furance Temperature Low

Scrapers are mounted on vertical shafts in each still and are rotated during the operation, thus preventing the accumulation of carbon on the heated surfaces. Any carbon which is formed tends to gravitate to the cooler bottom space, below the heated zone.

The oil in the still is equalized by liquid interconnections, just above the furnace at the point where it is desired to maintain the oil level, the vapor being taken off the stills as fast as formed and led directly to the bubble tower.

Comparatively low furnace tempera-

Making Good the Guarantee

Williams Double-Disc Gate Valve No. 127—representing the height of valve service. Ask your dealer for it.

No effort to shirk responsibility! No grumbling over severity of the service demanded! No "ifs or ands" or quibbling of any nature!

Service at a profit! That is the plainly understood proposition on which all **Williams Valves** are sold. Discriminating valve buyers know the **Williams** saves coal, labor, time and trouble, and assures uninterrupted production. Profits from such service are incalculable.

Williams Double-Disc Gate Valve No. 127

is one of the peerless **Williams** line that is famed for abolishment of all waste—for the insurance of a full, steady and leakless flow of Air, Steam, Water, Gas or Oil.

A tight seat is assured by the ball and socket bearing discs that also compensate for any temperature distortion or sagging of pipe lines.

An **exclusive** Williams feature is the Union Ring method of securing the bonnet to the body, providing a rigid, steam-tight joint that cannot corrode.

The heaviest stem used in any gate valve—made of special hard bronze that will not bend or break. Acme Standard threads assure maximum wear and long life. Packing is forced against the stem by a Packing Gland Follower.

Many other features that explain the extremely satisfactory service of Williams Valves are described in our Catalogue 10. It clearly explains why Williams Double-Disc Gate Valve No. 127 always makes good.

Made in two patterns—Medium for 200 lbs. pressure and Extra Heavy for 350 lbs. pressure. **Satisfaction Guaranteed.**

Catalogue No. 10 mailed on request.

Dealers Carry Williams Valves and Will Fill Your Order for a Sample Promptly.

The D. T. Williams Valve Company

Cincinnati, Ohio

Makers of High Grade Bronze and Iron, Regrinding and Nickel Seat Stop and Check Valves, Gate, Blowoff, Hydraulic, Swing and Ball Check, Needle, Hose, Whistle Valves, Stop and Air Cocks, Unions, Fittings, Water Gauges, Gauge Cocks, Oil Gauges, Lubricators, Oil and Grease Cups, Steam Traps, Separators.

Williams Valves

Mention Where You Saw the Advertisement

ture is maintained around the stills as only a moderate heat is necessarily applied at this point, most of the heat being supplied to the oil in the coil. The oil is maintained in the stills to a slightly lower temperature than at the exit of the coil, cracking being carried on in the stills at relatively low temperature (approximately 775 degrees Fahrenheit). A comparatively long time element is obtained, as well as a better and more complete conversion effected by the use of four stills instead of one, and with the plurality of stills large capacity secured in small units.

Thus, ideal conditions are maintained in the coil, where the greater heat is applied without substantial cracking, and cracking effected in the stills where a cracking temperature is merely maintained. The operation may be epitomized by saying that the oil is heated in the coil without cracking and is cracked in the still without heating, the temperature merely being maintained in the latter.

No Re-Running

There is another principle involved in the process which may be determined "clean circulation." It is accomplished by the hot cyclic return of the back trap from the bottom of the bubble tower to the pre-heating coil, none of the undistilled residue being permitted to return to the coil where the high temperature is applied.

The result of the Holmes-Manley closely regulated operation is to produce gasoline of unexcelled quality directly from the pressure still without re-running; the residue from the expansion drums being a low gravity, merchantable liquid fuel, and the total carbon produced in the system being extremely small, the formation of coke and carbon and fixed gases being, as far as possible, avoided.

Long Operation

How well this result has been accomplished is well illustrated by the fact that commercial runs have, over long periods of time, exceeded on the average more than 15,000 barrels each of the fresh charge through the process, and some of these units have continued in uninterrupted operation for over 60 days. The longest continuous run was for 63 days in 1923, in one of the older units, with a total charge of 86,424 barrels of cold, or fresh stock, the details of which are as follows:

West Tulsa Works—Battery 3—Runs 36
From 6:00 a.m. 10-28-23 to 8 p.m. 12-30-23

Charging Stock—	Bbls.	Pct.
Fresh gas oil	44,457	51.44
Cycle gas oil	41,967	48.56
Total	86,424	100.00
Yield—		
Naphtha distillate	32,387	37.48
Pressure bottoms	51,491	59.58
Wet gas—4,753,320 cu. ft. (3,159 ft. per bbl.)	1,505	01.74
Dry gas—11,031,276 cu. ft. (4,702 ft. per bbl.)	2,346	02.71
Coke—25,110 lbs. 305 lbs. per bbl.	82	00.09
Total	87,811	101.60
Gain	1,387	01.60
Total charge	86,424	100.00

Under pressure, 1.526 hours.
Rate charged per hour, 56.63 bbls.
Average operating pressure, 240 pounds.
Total fuel consumed, 5.45 bbls. per 100 bbls. charged.

Tests of Naphtha Produced

Gravity	60.5
Initial	84
20%	189
50%	279
90%	394
End Point	414

With the completion of the last units during the latter part of 1925, this company has in its own plants a total of 79 units, the first 24 of which, built in 1920, are rated at about 20,000 barrels per month charging capacity; the balance from 30,000 to 36,000 barrels per month each.

During the year 1925, 20,910,497 barrels of gas oil was charged through these units with a production of 8,235,955 barrels of gasoline, equal to 39.39 per cent of total charge and 66.11 per cent of fresh, or virgin gas oil. The total charge up to January 1, 1926, exclusive of operations prior to 1920, amounted to 67,639,538 barrels.

New Units

The new units that we are now installing are of such construction as to permit of a wider pressure range, varying it to meet the exact requirements of each particular charging stock, and a considerably better performance than the average reported above is possible. It is conservatively estimated that these new units, on gas oils or similar distillates from average Mid-Continent crude running, will average a charging capacity of 36,000 barrels per month with yields and tests approximately as follows:

Charging stock—	Bbls.	Pct.
Fresh gas oil	22,500	62.50
*Cycle gas oil	13,500	37.50
Total	36,000	100.00
Pressure still yield—		
Condensate	270	00.75
Naphtha distillate	16,200	45.00
Total	16,470	45.75
*Cycle gas oil	13,500	37.50
Cycle fuel oil	4,500	12.50
Fixed gas—8,339 M. cu. ft.	1,715	04.76
Coke—56,160 lbs.	180	00.50
Total	36,365	101.01
Gain	365	01.01
Total charge	36,000	100.00
Treating yield—		
Gasoline	16,223	98.50
Loss	247	01.50
Total	16,470	100.00

Finished yield—	Bbls.	Pct. Based on Total Chg.	Pct. Based on Fresh Gas Oil
Gasoline	16,223	45.06	72.10
Cycle fuel oil	4,500	12.50	20.00
Fixed gas— 8,339 M. cu. ft.	1,715	04.76	07.62
Coke—56,160 lbs.	180	00.50	00.80
Total	22,618	62.82	100.52
Gain	118	00.32	00.52
Fresh gas oil	22,500	62.50	100.00
Cycle gas oil	13,500	37.50	
Total charge	36,000	100.00	

*NOTE—Cycle gas oil is the product obtained from the redistillation of pressure still bottoms.

Tests—Finished Gasoline

Gravity—Baume	60.5
Color	Water white
Initial boiling point	90
20%	180
50%	275
90%	380
End Point	400
Sulphur	Less 1-10 of 1%
Corrison	Good
Doctor	Negative
Heat reaction	56
Iodine value	87
Acid absorption	11

Tests—Cycle Fuel Oil

Gravity—Baume	5.0
Flash—Clev. Open Cup	225
Fire—Clev. Open Cup	290
Viscosity—Furol at 122° F.	70
Free Carbon	0.4%

Cost Low

Operating in this manner, exclusive of royalty, gasoline can be made at less than 2 cents per gallon over and above the cost or value of the charging stock, the operating costs in this including not only the plant costs but all general overhead and all other charges properly applicable to the operation, whether a plant by itself or a part of a general refinery installation.

Some of the distinct advantages of the Holmes-Manley process are as follows:

1. The large throughput in comparatively small units, the contents of which, including stills, pre-heaters, exchangers, condensers, etc., is only about 450 barrels.

2. The large percentage of liquid yield with minimum amount of carbon and minimum amount of fixed gases.

3. The satisfactory yield and high quality of naphtha produced, which does not require redistilling and requires only chemical treatment to make it fully meet all requirements of the consuming trade.

4. The generally lower temperature operation and the very satisfactory temperature regulation possible, which avoids overheating at any point in the equipment, and as consequence, a sweeter, better grade of gasoline, with better distillation and higher gravity, is produced and, as stated above, the minimum of carbon and of fixed gases.

5. The percentage of time which equipment can be kept in operation. It is estimated that our latest type units can be very easily kept under pressure an average of about 90 per cent of the time.

6. As the equipment is now designed and operated, it produces gasoline, cycle gas oil, and what we term cycle fuel oil, and while the yield of this fuel oil is small and the gravity low, the quality is good, the viscosity low and is readily consumed in the refinery or salable for use by other industries as steam fuel.

7. Color: Water white.

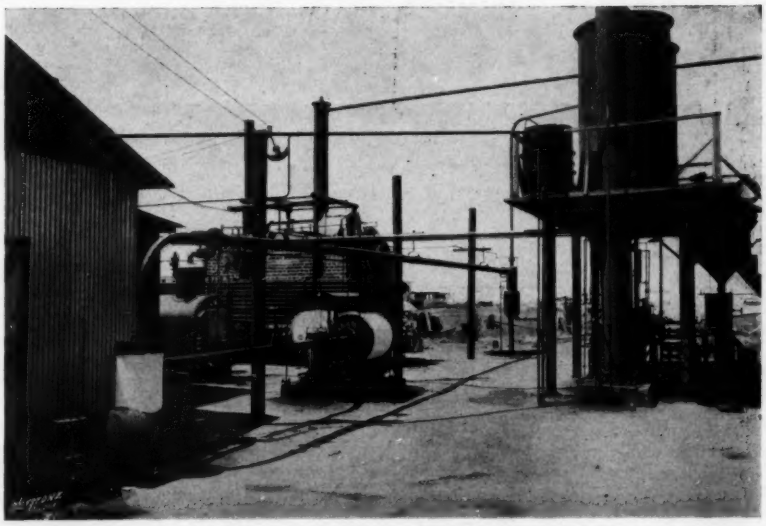
The trade is fast recognizing the distinct advantages of these properly made cracked gasolines over the straight-run gasolines, because—

1. Of the generally higher percentage of lighter and more volatile fractions.

2. Of the better starting qualities, and

3. Of the non-detonating (anti-knock) qualities.

Cracking Accomplished by Temperature in Pyro Process



AMONG new development brought out in connection with the petroleum industry at the recent convention of the American Petroleum Institute, was a new process for cracking oils, which caused quite a little comment.

Cracking of petroleum for the manufacture of synthetic gasoline and the recovery of other valuable hydro-carbon compounds has come to stay, and probably will become the greatest factor entering into the manufacture of motor fuels.

It is generally conceded among petroleum technologists, refinery engineers and others interested in the manufacture of suitable motor fuels, that the product obtained from cracking plants has many advantages over the straight run product, from the standpoint of initial cost of production, anti-knock properties, and the increased mileage obtained from its use.

There is another important advantage adherent to the cracking process in the fact that many valuable hydro-carbon compounds can be produced commercially which cannot be obtained by the straight run system of refining.

Present Drawbacks

Everyone conversant with the present system in use for cracking oil realize their many difficulties, the most important of which are: high initial investment, (due to the use of combinations of high pressures and temperatures), the dangers to life and property resulting from the breakdown of apparatus operating under these conditions; and the necessary shut downs and resulting time loss involved for the removal of carbon.

In a new process, invented and patented by Lincoln Clark, of Pasadena, California, and known now to the trade as the Pyro Oil Process, many of these difficulties have been overcome in a very simple way. Mr. Clark has in operation an experimental plant at Alhambra, California, where test runs on various oils are conducted and very gratifying results obtained.

Cracking the oil is accomplished by temperature alone and without the use of any self-imposed pressures, by the simple means of introducing the oil to be cracked directly into the combustion gases of a specially designed furnace, where temperatures as high as 3,000 degrees F. can be maintained without danger of destroying the apparatus. The oil is cracked by the temperature of, and in the presence of, the combustion gases.

Furnace Construction

The furnace consists of two parts, the combustion chamber and a mixing chamber. These are both fabricated of sheet steel and lined with a highly refractory material. This material is the only renewable part of the apparatus and necessary renewals apparently are not any more frequent than is the case of any ordinary smelting furnace. Some idea of the size of the cracking unit may be judged from the fact that a 50 barrel experimental unit is no larger than a 22-inch tee.

Combustion gases are generated under pressure by a fire and pass out of the combustion chamber in a confined zone, passing through the mixing chamber, and travel in a confined zone until finally released.

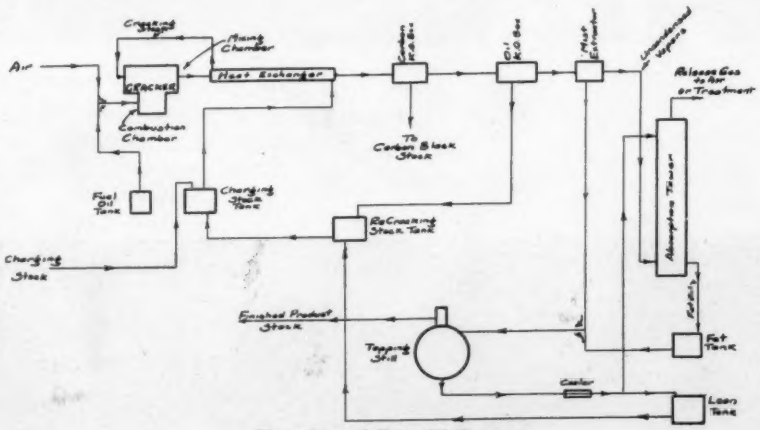
Into the hot combustion gases, in the mixing chamber, oil is forced and the amount of oil admitted controls the temperature which the oil may reach. Mixture of the combustion gases with the oil is forced forward, cooled, the condensates separated, and finally passed through an absorption tower, where the gases are freed from the lighter hydrocarbons.

Air Only Pressure

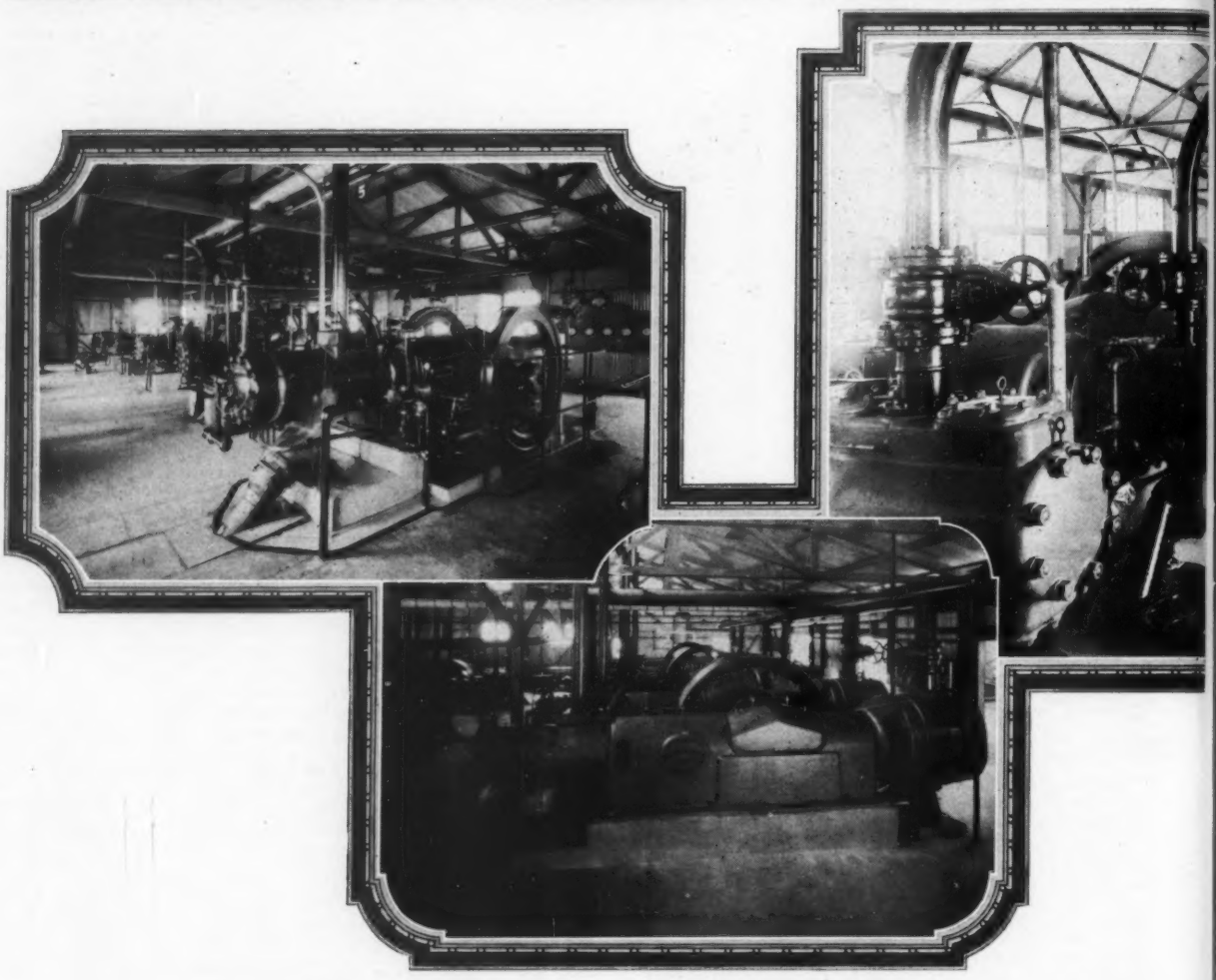
Pyrometers are provided on the combustion chamber and when the apparatus is balanced for any specific oil no further adjustments are necessary. The air is admitted at sufficient pressure to insure the passage of the gases through the system, which varies from 10 to 40 pounds per square inch, and is the only pressure used on the system. The contact between the oil and cracking medium is obviously 100 per cent.

Any desirable pressures may be used, and it is evident that with such controllable means of temperature and pressure any oil may be put in an environment which will cause the greatest conversion.

The process is a continuous one. The carbon is of an extremely flocculent na-



Flow chart of Pyro Oil Process



PROFIT-BEARING

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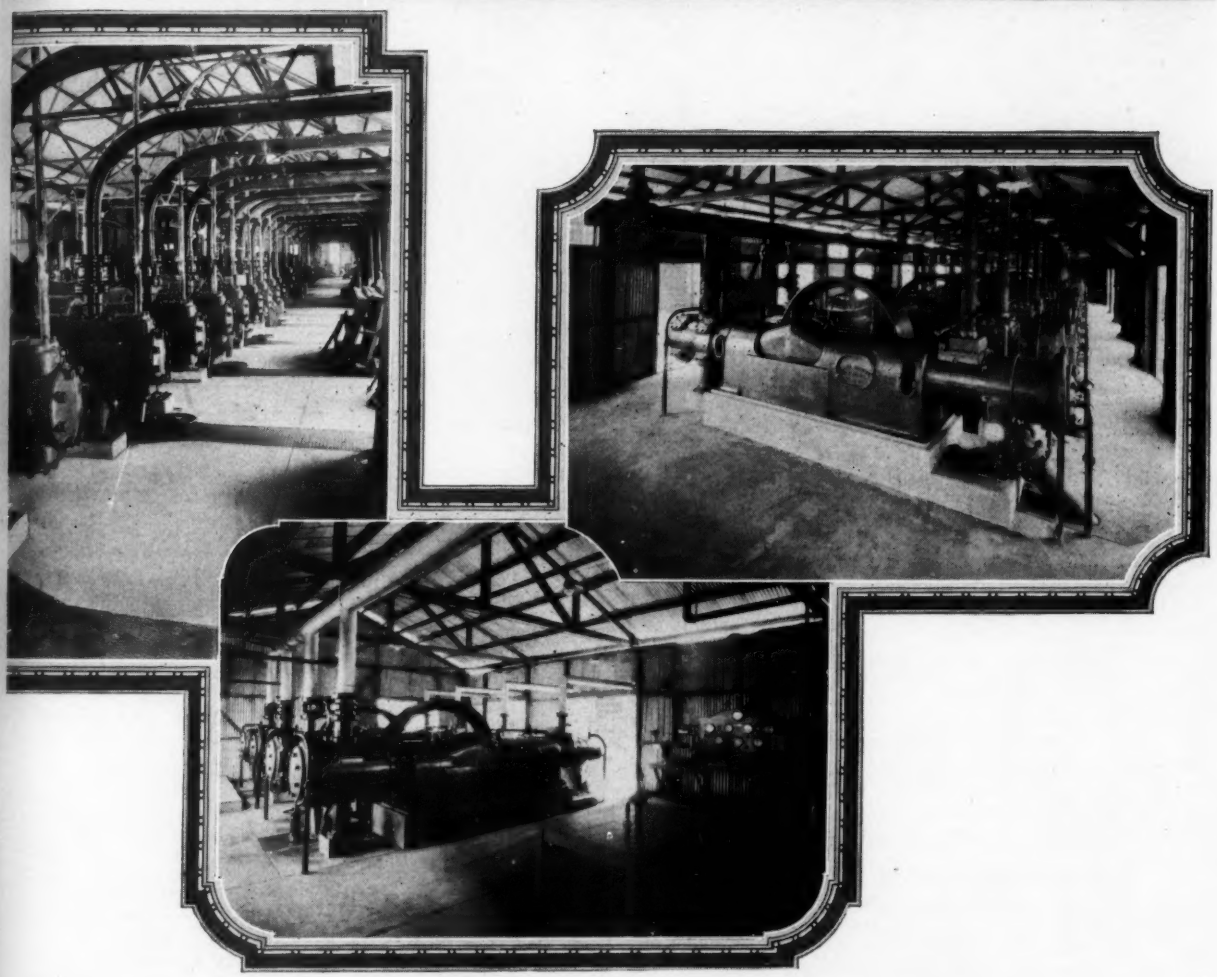

GASOLINE PLANTS

SERVICE.

SMITH-BOOTH-USHER COMPANY
228 S. Central Ave., Los Angeles
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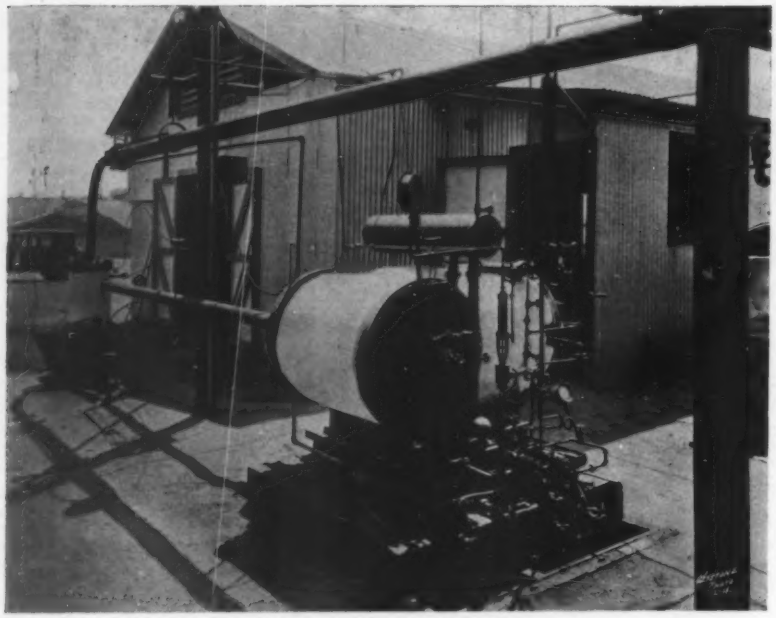
S ENGINES



ture and is carried on through the system to a convenient point where it is periodically blown out without interfering with the operation of the plant. Should it form at the point of contact in the mixing chamber, by a simple means of oil cut off, steam is admitted and the carbon instantly removed.

Where necessary the system is lined with a highly refractory material, and the fact that it is a direct contact process and not dependable upon heat transference through materials, the apparatus is practically indestructible.

Carbon, due to its flocculent nature, has the same market value as does lamp black, and is a by-product of commercial value.

Tests Show High Yield

Test runs made on the apparatus using 27 degree Baume, plus California distillates as charging stocks, have shown conversions ranging from 40 per cent to 60 per cent with the specified boiling points of standard specification gasolines.

The cost of installation is reduced to a minimum as there are no high pressures used involving expensive and heavy construction, and outside of the cracking unit itself all other apparatus is standard low pressure equipment of a nature that is usually on hand around most refineries.

Its advantages as claimed by Mr. Clark, are as follows: 100 per cent contact, insuring maximum conversion; no high pressures, calling for expensive construction; minimum fire hazard and possible loss of life, due to operation at low pressure; high recoveries; by-products of a commercial nature; continuous operation, etc., which must appeal to all interested in cracking plant installations.

The field for a cracker of this sort is very broad, in that all intermediate series distillates produced in the refining of crude oils can be converted profitably into a product of a much higher market value.

Due to the fact that such high temperatures can be obtained and maintained it is possible to crack gas, and a special connection is provided, when desired, at the proper place on the cracker where if necessary gas can be admitted and cracked with the oil.

Besides having a place in the refineries, old absorption oils from absorption plants can be passed through the cracker and if necessary can be cracked together with the fixed gases from the same absorption plant, to form a liquid hyro-carbon product.

Just as the refineries and absorption plant, to form a liquid hydrocarbon prodmanufacture of motor fuels, so has the cracking plant.

The proper place for the cracking plant is as a distinct and separate unit between the refinery, at one end of the line and the absorption plant at the other end of the line, rather than as an integral part of the up-to-date refinery plant equipment, is the opinion of some. Standing as it then would, it would take the by-products from both ends of the line and convert them into much higher marketable products.

Adsole, New Absorbent Offered Gasoline Trade

Los Angeles, Calif.—An adsorption power of from 25 to 40 per cent of its own weight, is the claim made by manufacturers of Adsole, a chemical compound used in the manufacture of gasoline.

According to M. Hamada, Pacific Coast representative of the Institute of Physical and Chemical Research of Nippon, Japan, which manufactures the compound, Adsole bids fair to revolutionize methods for treatment of natural gasoline. This is true, he claims, because "Adsole" can not be crushed by piling up in an adsorption chamber or outside storage; the relative proportion of its adsorption power is restored to original state by cooling, so that it can be used repeatedly. It is the recovery of gasoline from natural gas more efficiently, safely and at less expense.

Adsole, which resembles a colloidal silica, is a porous, granular substance with an extremely large adsorbing surface. The degree of its adsorptive power varies according to the humidity of the surrounding gases or gas.

Heating, such as is used in practical, commercial practices, does not impair or cut down the adsorptive power of the compound. So long as it is not heated to 300-400 degrees Fahrenheit, there will be no shrinkage in the mass dimension of "Adsole," and, consequently, no loss in adsorptive power, according to the Institute.

For further information concerning the new process and compound, address M. Hamada, the Adsole Company of America, Suite 200 Los Angeles City Club Bldg., Los Angeles, Calif.

Partnership Formed to Represent Manufacturers

Tulsa, Oklahoma.—Products for use in refineries and natural gasoline plants in the Mid-Continent will be handled by the recently formed Bissett-Brown & Morgenstern concern, with offices in Tulsa, Alexander building, and Fort Worth, Holmes building. The concern will represent manufacturers, selling to jobbers only.

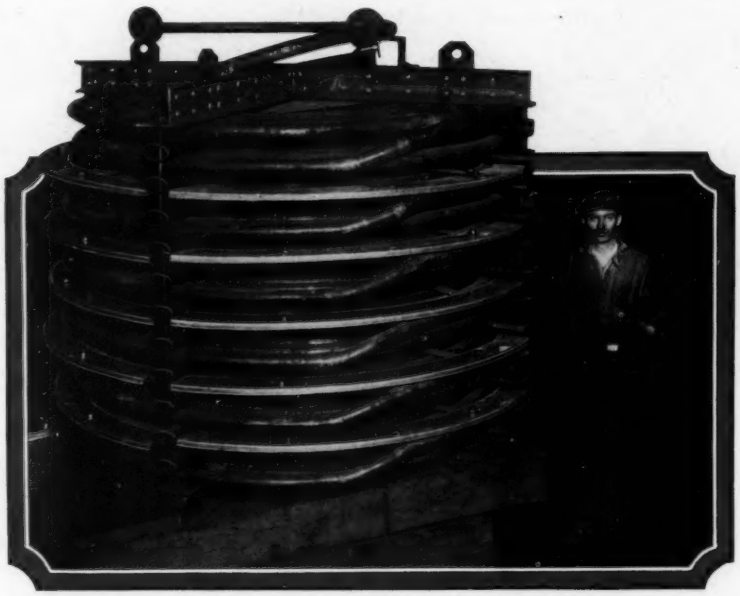
Among the manufacturers now represented are the Ohio Injector Company, Wadsworth, Ohio; Scandinavia Belting Company, Newark, N. J.; Upson-Walton Company, Cleveland, Ohio, and the Dallas Waste Mills, Dallas, Texas.

Refinery Supply Company Opens Branch at Dallas

Tulsa, Okla.—The Refinery Supply Company through W. A. Schlueter, president, of Tulsa, annuounces the opening of a branch at Dallas, Texas. This branch will be in charge of R. E. Copman and a full and complete line of scientific laboratory and power plant equipment will be carried at all times.

Included in the stock of the Dallas branch will also be carried Tagliabue oil testing instruments, recorders, controllers and Meriam manometers and a complete line of products of the Jos. W. Hays Corporation for which the Refinery Supply Company is sole distributors for Oklahoma and the northern half of Texas.

The growing demand for the company's products in the Mid-Continent field has necessitated this expansion on the part of the Refinery Supply Company.



"The best coil job I ever inspected"

SUCH was the unsolicited report of our customer's field superintendent when he had completed a careful inspection of the coil shown above.

This superintendent had us apply a 2000 pound hydrostatic test pressure to the coil. There were no leaks—not even a sweat—on the first test. But his inspection was not only for tightness, it also included accuracy of dimensions and quality of workmanship.

It is interesting to know that no special precautions were taken in the Midwest Shops during the fabrication of this coil. This is simply another way of saying that: ***All precautions are taken in the fabrication of all Midwest Coils so that they are absolutely tight, accurate in dimensions and have highest grade workmanship.***

Midwest engineering and shop facilities are complete in every detail, their location is advantageous, and a very large stock of steel and wrought iron pipe is always carried on hand. The significance of all this is that you get not only a coil job comparable with the one shown here but the time between placing your order and the shipping date is reduced to a minimum.

Therefore, when you need pipe coils—write, wire or phone Midwest.

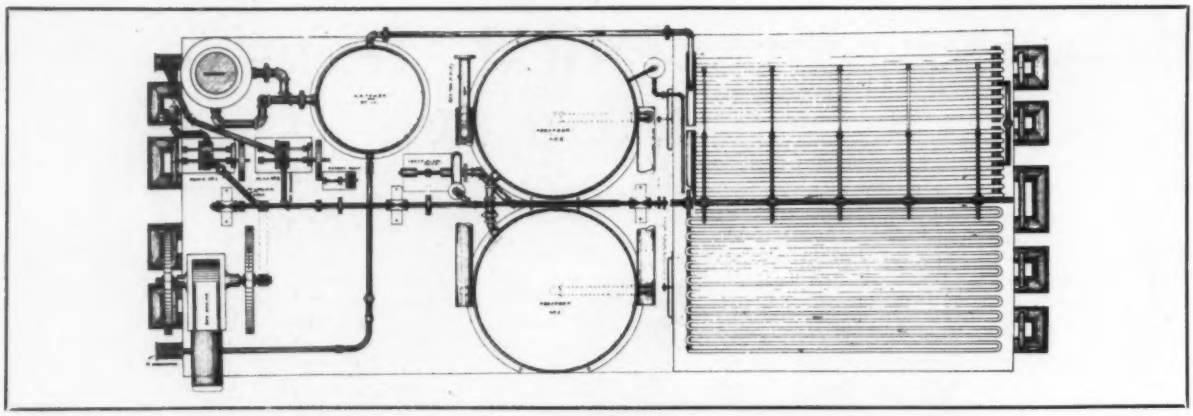
MIDWEST PIPING & SUPPLY COMPANY

Second and Miller Streets,
St. Louis, Mo.

Tulsa Office: 805 Mayo Building Chicago Office: 208 South La Salle St.

Fabricators of Oil Refinery, Natural Gasoline Plant and Power Piping

MIDWEST Pipe Coils



The Gilmore Portable Gasoline Plant

The National Gas Products Corporation, 621 Detwiler Building, Los Angeles, California, are now putting on the market the latest development in Portable Gasoline Plants.

This Portable Absorption Plant unlike other portable plants now on the market, is a complete plant in itself and needs no additional equipment whatever to manufeature gasoline, just connect the absorbers to a gas supply, start the engine, fill the system with absorption oil and light the fire under the still and the plant is in operation producing gasoline. All the operator needs to furnish is water, gas and storage for the gasoline produced.

The most remarkable thing about this plant is its wonderful capacity for its size. The two million foot plant, which has at least a 100% overload capacity, is only eleven feet wide, twenty-eight feet long and eleven feet high, when prepared for shipment. When erected it is twenty-six feet high. The enormous capacity is explained by the following data on the two million foot unit:

Absorbers—2, 64 inches in diameter by twenty-four feet high, Gilmore Bubble type, capacity at 15 lbs. gauge pressure and 30 sec. oil contact is 4¾ million cubic feet per day; at 30 lbs. gauge pressure and 30 sec. oil contact it is over seven million cubic feet per day. At rated capacity at 15 lbs. gauge pressure the oil contact is over one minute and under this condition a saturation of about 10% with one gallon gas is practical.

Still—The still is either a steam still or a combination steam and fire still at the buyers election. The combination steam and fire still requires no boiler as it supplies its own steam requirements which are only one horsepower per thousand gallons production. The steam still will require a source of steam not furnished with the plant. The still capacity is sufficient to strip 25 gallons of oil per minute containing 10% gasoline to less than 1%.

Cooling Tower—size 11 feet by 11 feet by 20 feet high, with forced draft. The top half is removable for shipment and the lower half is closely filled with cooling coils. The forced draft blows air upward through the tower at the rate of forty-five feet per minute and this gives a wonderful cooling effect by evaporating the water on the coils.

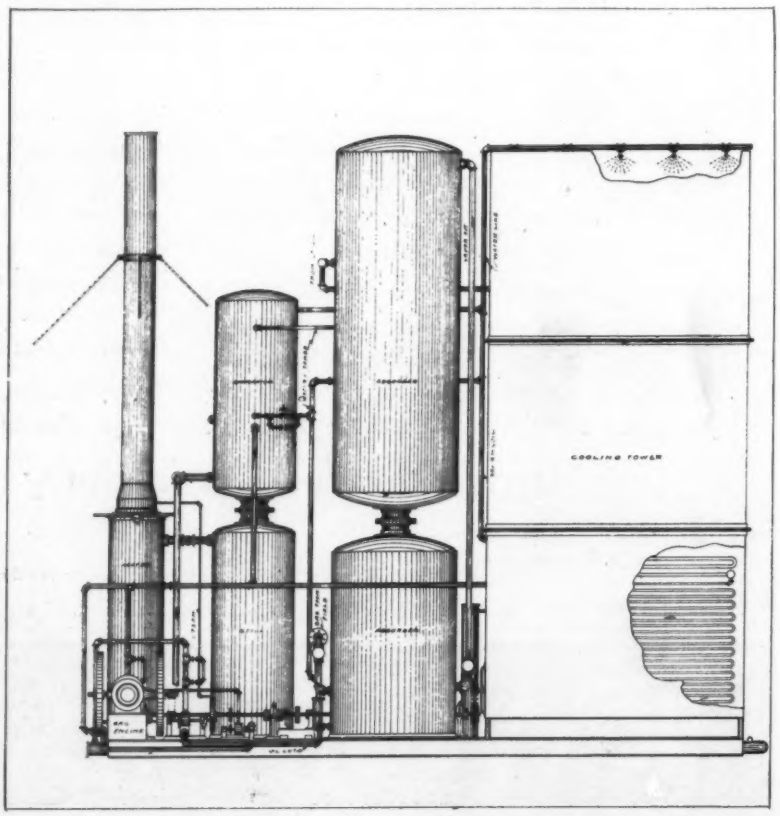
Oil Cooling Coils—8,000 feet of 1¼-inch light tubing giving a cooling surface of 3500 square feet.

Gas Condensing Coils—960 feet of 1½-inch light tubing giving a cooling surface of 480 square feet.

Heat Exchanger—A high velocity, intimate contact tubular heat exchanger with 1,000 square feet exchanger surface, the value of the co-efficient of heat transfer being about 60 B. T. U.

Power Plant—15 h. p. gas engine driving the pumps and fans with silent chains.

Pumps—Oil pumps are rotary with a capacity of 25 gallons per minute against



What Insulation Means to The Refiner*

By L. E. Cover,
Armstrong Cork & Insulation Company

THE business of insulation and the business of refining touch each other at so many points that I feel that for both of us there is much to be gained by establishing a little better understanding of each other's problems. Knowing more about insulation than I do about refining I shall talk about refinery processes only in their relation to insulation.

But first let me give you a little picture of the broader aspect of the insulation business and how closely it is related to practically every industrial activity. This will help me to make it clear that what we claim to know about insulation for refinery equipment is merely the development and application of experience and research covering almost every conceivable condition of temperature and construction.

Insulation as we know it now has developed from its crude and inefficient forms almost within the past 20 years. Many factors have contributed to its rapid growth, among which I might mention a few:

Insulation Demands

1. The increasing demand for all sorts of edible products, meats, vegetables, fruits, milk, butter, eggs, etc., regardless of their season, has brought about an enormous extension of all kinds of cold storage facilities, pre-cooling plants, freezers, refrigerator cars, large central cold storage warehouses and smaller distributing units, retail coolers, etc., all involving very intricate problems to be solved by the insulation manufacturers and engineers.

2. The rapid development of ice cream manufacture using lower temperatures than the refrigerating industry in general in both rooms and refrigerated piping.

3. The supplanting of natual ice by the manufactured article with its own peculiar problems of storage and distribution.

4. The household refrigerator and combined refrigerating equipment.

5. The modern baking industry requiring insulation for both high and low temperatures as well as for the maintenance of constant temperatures.

6. The steam turbine utilizing steam at ever-increasing temperatures and pressures.

7. Super-power plants with their high-capacity boilers and auxiliary equipment, burning all sorts of fuel and making use of every device for increasing efficiency and economy.

8. The tremendous development of the heat treating industries with their furnaces and ovens, the glass and ceramic plants with lehrs and kilns, and many other plants too numerous to mention with heated equipment of every description, all requiring insulation to meet specific and sometimes very unusual conditions.

I could go on citing cases almost indefinitely from the automobile and electrical industries, the paper mill, the manufacture of tobacco products, woolen and cotton mills, and so on where you will find that the use of the proper insulation at some key-point is one of the reasons why American industry has been able to increase its productive power and to reduce its operating costs to such a remarkable extent.

The reason for giving you this preliminary picture is to make you realize that in the development of the use of insulation properly for all these varied conditions, the insulation manufacturer has fully kept pace with the demand for his products. We all have our engineers, chemists and laboratories. I know of no case where the demand for the proper material or method of application has not been met by our industry. We, of course, have made mistakes at times in our recommendations, but more often insulation failures can be laid to misuse or negligence on the part of the purchasers. We will discuss this in more detail later.

The necessity for insulation in our present scheme of civilization was emphasized when the Division of Engineering and Industrial Research of the National Research Council set aside some of its funds to establish a Committee on Heat Transmission. The chairman of this committee is Mr. W. H. Carrier, president of Carrier Engineering Corporation. Its membership is composed of men from the government departments, leading universities, large industries and insulation manufacturers.

The objects of this committee are as follows:

Item No. 1.—To organize and coordinate all present useful knowledge of heat transmission so that it may become available from the use of the engineering industries.

Item No. 2.—To encourage and initiate heat transmission research in accordance with a definite program to the end that information at present lacking may become available. Particular stress is here laid on the need for interlocking all experimental research with fundamental physical principles, in order that, for new problems in design, results may be predicted in advance without resort to guesswork or to preliminary experimentation.

Item No. 3.—To serve as a clearing house for all activities in the field of heat transmission.

Present Efforts

Its present efforts are concentrated on the following:

(A) To prepare a critical review of the authoritative existing information in its field.

(B) To prepare a program of investigational work needed to settle disputed points, or to secure needed information.

(C) To suggest where and by whom any proposed work should be carried out.

We are confident the efforts of this committee will mean as much to our industry as the work of the American Petroleum Institute does to yours.

And of course, whatever of value comes from their work will not be confined to ourselves, but will be shared by all industries using insulation. The data will be used by us as the basis for working out problems of insulation and will result to the benefit of the refining industry fully as much as to that of the insulation manufacturers.

Insulation and Refining

The insulation problems of the refiner are peculiar in that he must in-

*Paper presented at the Annual Convention of the Western Petroleum Refiners Association, Fort Worth, Texas, March 3, 1926.

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100 lbs. pressure. Water pumps are centrifugal which will supply a water circulation of around 200 gallons per minute.

The entire plant is mounted on a channel frame in such a way that it can be moved in one piece, or if it is desirable to reduce height and weight, the tops of the absorbers, cooling tower and the evaporator can be easily removed and transported separately. Each piece of equipment is made separately and then bolted together, so that it is very easy to take the plant completely apart for moving over difficult ground.

The One Million Foot Unit is very similar to the Two Million Foot Unit but has only one absorber and the other equipment is correspondingly smaller.

These plants are almost perfectly automatic so that the pumper on a lease can readily operate them. They are built entirely of metal so that they are fireproof. Because of the great overload capacity, extremely high efficiency, and 100% portability of these plants and because the plant is a complete producing Unit, and the cost is much less than the average stationary absorption gasoline plant there will undoubtedly be a great demand for them.

THE REFINERY SUPPLY COMPANY

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Largest Scientific Material House in the Southwest

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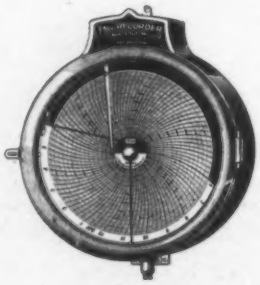

TULSA

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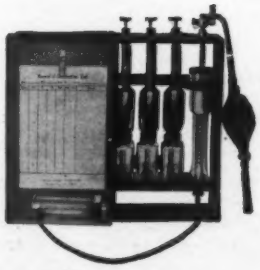

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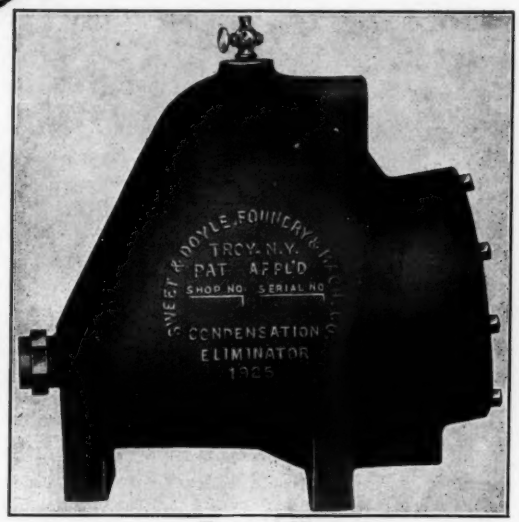
BETTER THAN A STEAM TRAP!

Let us tell you why.

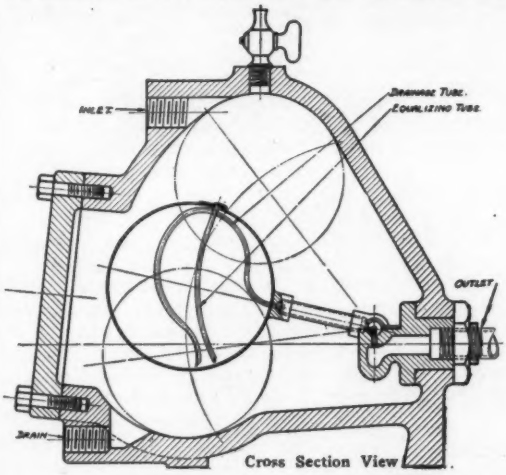
A NON-COLLAPSIBLE FLOAT with equalized internal and external pressures.

NONE other like it.



External View

THE SWEET & DOYLE Condensation Eliminator



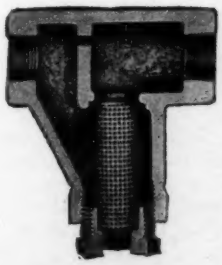
Cross Section View

Constructed
ADAPTABLE FOR
Every Steam Trap Service.

Level Control in Stills.

Combination Gasoline Trap and Water Extractor.

Cast Iron or Steel Construction to meet any pressure condition.



THE S. & D. UTILITY STRAINER

Self cleaning type, non-air-binding. Simple, compact, and built strong.

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Data sheet, Bulletin No. 9, and further information at your request.

THE REFINERY SUPPLY COMPANY

Fourth and Detroit
Tulsa, Okla.

917 Santa Fe Bldg.,
Dallas, Texas.

sulate against a wider range of temperatures than any other single industry. Also the tendency to make all operations around a refinery a continuous, or semi-continuous, process as distinguished from the old batch system means not only more expensive equipment, but also that the successful operation of this equipment depends upon keeping the temperature in each unit at as near a predetermined uniform level as possible. This means that insulation requirements must be carefully planned.

Refinery processes involve temperatures from 25 degrees F. below zero to 2500 degrees F. above. The principal use of cold temperatures and refrigeration is in connection with the various processes of separating wax from lubricating stock. These temperatures, depending on the process, range from 25 degrees F. below zero to 20 degrees F. above zero.

Two Phases

Storage of natural gasoline, crude oil and refined products must be insulated against the range of outdoor temperatures at your refinery plus the added heat of the sun on storage tank roof.

Distillation operations divide themselves into two phases: those under 550 degrees which are the more common still temperatures you have been used to maintaining, and those over 550 degrees up to even 1000 degrees which are used in the various cracking processes. The introduction of pressures into these processes naturally demands better steel construction. It also requires a form of insulation that can be readily removed at the weaker points for inspection of the shell, and as readily replaced.

You also have to consider your still and boiler settings, breechings and other high temperature equipment.

In addition there are, of course, your steam plant and its lines, pumps of all kinds, and pipe lines carrying products to and from the various operations, involving all temperatures mentioned.

In considering these varied insulation problems of the refiner I wish to point out the three factors that are essential to a really first class and economical job of insulation. These are:

(1) Selection of the correct material for the temperatures involved.

(2) Proper application of the insulation to the equipment.

(3) Effective maintenance of the insulation after it is installed.

I shall take these three items up separately. If in this discussion I stress strongly the failure of insulation due to neglect of any one of the above causes, it is with the thought that such cases are in the minority and that most installations are performing satisfactorily.

(1) Selection of the correct insulating material for the temperature involved:

Too often the first and only question the refinery engineer asks us is, "What is the conductivity of your material?" More on this phase of the subject later. What we wish to emphasize now is that conductivity is only one of the factors that determine whether or not the insulation is the correct one for the purpose intended. Among other questions which the refiner should ask of insulation are:

(1) What are its physical properties? Is it structurally strong? Can it be handled conveniently and without breakage by our men? All insulations, to be relatively good non-conductors of heat, must necessarily be light in weight. Is this lightness in weight obtained at the sacrifice of strength? Too often the refiner used to working with steel, concrete, brick and other structural media expects insulation to have physical properties of like nature. It does not, of course; but it can and should have ample structural strength to insure proper handling and stability.

(2) Will the insulation withstand the temperatures of the process without deterioration either as to its conductivity or its other physical properties?

(3) How is the material affected by weather conditions?

(4) What action do fire and water have upon the insulation?

(5) Is the insulation furnished in convenient sizes? Can it be had in special shapes and sizes for the equipment?

(6) What is the expected life of the job and will the insulation pay for its use in this time?

(7) Is there a possibility of the insulation being re-used, should there be a change in equipment?

(8) What is the proper thickness to use?

We could elaborate on all of these points and add other minor factors which should also be considered when a large building or repair program is up. Obviously, every one of them is of vital importance to the total efficiency of the insulation. Without them, conductivity by itself would be almost valueless.

Now Conductivity

To return now to the question of conductivity. We find, too frequently, that the engineer accepts our conductivity figures with a smile. One elderly superintendent of the old school asked us in the first few minutes of an interview, "Well young man, where is your little piece of paper?" "What paper?" we asked. "Why, the paper all you insulation men carry around showing where, by your tests, your own insulation is far superior to the other." As a matter of fact, we believe that the figures published by most manufacturers can be accepted without question. It is true that the methods of testing are slightly different, but the insulation must fall within certain narrow limits of conductivity or it is not commercially feasible.

Your engineers also point out at times that our figures on B. t. u. losses are obtained from experiments made under laboratory conditions, and force us to admit that we could only hazard an approximation of the savings made by insulation under operating conditions. You know, too, that if we attempt to calculate the results in actual practice, we must assume about half the constants used in our calculations.

Now let me draw an analogy between insulation and the steel supporting columns and beams of your stills and towers. Do you figure the exact size of the columns to use with a given load and temperature conditions? You do; but what else do you do? You multiply your calculated answer by three or five or some other number for a "factor of safety," and then you multiply again by two to allow for the possibility of a fire, and thus arrive at your final sizes and thicknesses. Have you ever attempted to incorporate this "factor of safety" in your insulation calculations? An excellent plan to follow in deciding on your insulation, is to picture in your mind an ideal insulation possessing all the qualities you consider essential for that particular job, plus this factor of safety. Then buy the insulation whose characteristics most nearly conform to this ideal. In this way you can be fairly sure of getting the most nearly perfect insulation the industry has to offer, and will reduce to a minimum the risk of emphasizing any one factor at the expense of another or others just as essential. Conductivity will not then become the sole basis for your decision. Structural adaptability and stability under operating conditions will have equal weight in your consideration, as they should.

(2) Proper application of the insulation to the equipment:

The second essential is the proper method of erecting insulating materials. Years of experience have taught us the importance of careful workmanship when the initial installation is made. This does not mean that the work is so difficult that men specially trained are the only ones who can erect insulation properly, or that in buying insulation, the erection contract should necessarily be awarded to the insulation company. We feel rather that the refiner, who is one of the largest users of insulation, has enough of this kind of work all the time so that he can well afford to train men to handle it. Generally speaking, he will save time and money by erecting his own insulation. We also feel that the insulation manufacturer should be required to furnish erection specifications and instructions which shall be so complete that the finished job will be right.

The chief engineer of one of your large Texas companies recently said to me, "What is wrong with our insulations? You come here and tell me of your company's products, how good they are, how they are designed for my particular needs, and how long they

(Continued on page 157)

A Western Refiner said to us—

"—I've been reading some of the broad statements you folks have been making in your advertisements regarding the MASTER MIXER HEAD—send one of your engineers over to me—I want some information."

—and we proved to him that we could save 20% to 80% on Gasoline Treating costs!

The MASTER MIXER HEAD embodies scientific accuracy, economy and efficiency—it is the result of years of experience and research—a card will bring full detailed information.

Petroleum Appliance Company

1419 West 8th St. *Los Angeles*

Convention Proves Mile Stone in Affairs of Refiners Association

OVERSHADOWING events of the convention of the Western Petroleum Refiners Association in Fort Worth, March 2, 3 and 4, was the assurance that affairs of the organization will follow in the next year the course that has been followed for the past two years.

First proof of this came with the election of P. M. Miskell as president. The general manager of the Empire Refineries, Inc., has been vice-president of the organization for a number of years and for the past two was first vice-president. So his elevation to the presidency was a mark of approval for the manner in which the association's affairs have been conducted, for he has had part in determining the manner.

The whole convention was marked bly harmony, sufficiently evident to bring the conclusion that the refiners of the Mid-Continent are determined to follow the course they have been on for the past two years.

Henderson Vice-President

The only other change in the list of officials was the elevation of C. L. Henderson to a vice-presidency. Mr. Henderson, vice-president of the Vickers Petroleum Company, has served as chairman of the technical committee for two years. In this time each convention has devoted a day to papers and discussion on technical subjects, a feature that has increased both interest ond attendance at the conventions.

Roy B. Jones, president of the Panhandle Refining Company, and George D. Locke, vice-president of the Barnsdall Refining Company, were re-elected vice-presidents.

Further approval of conduct of affairs of the association came with the retention of Howard Bennette as managing director and H. K. Davis, as statistician. Frequent reference was made during the convention to the excellent manner in which the office has been conducted and of the value of association statistics to members.

As a token of appreciation for his efforts as president for two terms, the membership of the association presented F. A. Pielsticker, retiring president, with a silver service. The presentation was made at the annual banquet the second evening, Pat Malloy, former president of the body, making the presentation.

In P. M. Miskell, the Western Petroleum Refiners Association elected as president a man, whose efforts in behalf of the organization date back to its formation.

For the past six years, he has been a vice-president of the organization. Rate matters have drawn a big share of his attention, both in the association and out, as his first work was in the railroad field. Later he entered banking.

His connection with the oil industry with the Barnsdall organization in Ohio and Pennsylvania. He remained with the Barnsdall interests in the East until 1915, when he came to the Mid-Continent, becoming manager of the American Refining Company plat at Okmulgee.

A year later this plant became the property of the Cities Service Oil Company and he was made general manager of the refining division then set up by the Doherty company. Since then, his company, now the Empire Refineries, Inc., has built three other plants, one at Ponca City, one at Cushing and one at Gainesville, Texas.

In addition to being general manager of the Empire Refineries, Inc., Mr. Miskell is manager of marketing facilities of the Cities Service Company west of the Mississippi River.

He is a director of the American Petroleum Institute and also a director of the Mid-Continent Oil & Gas Association.

Mr. Pielsticker was named a director of the association.

Other new directors are E. H. Eddleman, vice-president of the Texhoma Oil & Refining Company, C. E. Gerteis, superintendent of the White Star Refining Company, Detroit; J. E. Shatford, president of the Ouachita Valley Refining Company, El Dorado, Arkansas, and E. D. Levy, president of the Pierce Oil Corporation, St. Louis.

Preceding the convention proper, traffic managers held a session the morning of March 2 in the Texas hotel.

The convention got under way with the president's annual address in the afternoon. Next Fayette B. Dow, Washington Counsel, gave his annual report.

Technical Papers Heard

A paper on credits was then presented by A. B. Eisenhower of the Commerce Trust Company, Kansas City. He went into methods by which banks weigh credits on the Morgan plan.

The second day was given over largely to technical papers, which were printed in the March number of The Refiner and Natural Gasoline Manufacturer. Isaiah Hale, safety supervisor of the Santa Fe System spoke on "The Mind as a Factor in Industrial Accidents," and Edward P. Bailey, former president of the American Oil Burner Association, on "What Domestic and Industrial Oil Burning Means to the Refiner."

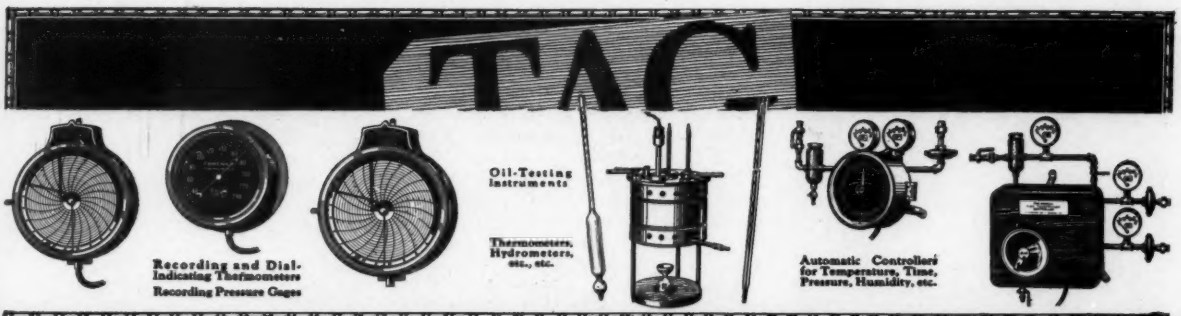
The third day was given over to business affairs. A breakfast started the day. Harry H. Smith, secretary of the Mid-Continent Oil and Gas Association read a paper on taxation.

Entertainment during the convention was in charge of the Fort Worth business interests. W. M. Harrison, president of the Star Refining Company and Louis A. Greene of the Radio Petroleum Company were prime movers in this entertainment. A barbecue with entertainment was held the first night.

Official Roster Western Petroleum Refiners Association

President: P. M. Miskell, general manager, Empire Refineries, Inc., Tulsa.

Vice-presidents: Roy B. Jones, presi-



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WE don't sell TAG Automatic Controllers as ornaments but as investments. Buy controllers as you would bonds. Ask "Which pays the surest and highest dividends?" Then buy!

A few weeks ago a large Philadelphia textile mill asked this question. Their Consulting Engineers, the Ballinger Co., ran a two-week test on one of their dye kettles, "with and without" TAG Control. Official report: Forty-odd TAG Controllers (about $8,500) will save over $10,000 a year on fuel alone! And there were other advantages, of course . . . . . We got the order.

This is the **usual** answer with TAG Automatic Controllers, over 30,000 of which (more than any any other make) have paid for themselves in 118 industries. In the refining of petroleum products several types of TAG Automatic Controllers have paid such high dividends that they are standard equipment in many progressive refineries.

TAG Controllers save more money!
They are *Preferred* Investments!

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The slogan symbol of TAG Automatic Control of fractionation.
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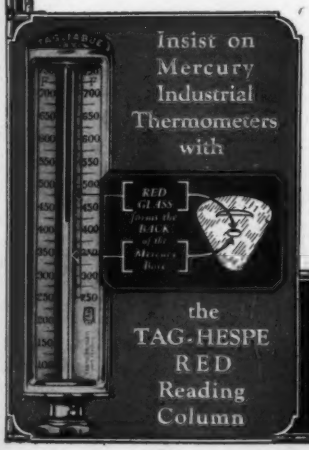

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Vice-president the Western Petroleum Refiners' Association; also vice-president of the Vickers Petroleum Company

dent, Panhandle Refining Co., Wichita Falls; George D. Locke, vice-president, Barnsdall Refining Co., Chicago; C. L. Henderson, vice-president, Vickers Petroleum Co., Wichita, Kansas.

Managing Director: Howard Bennette, Western Petroleum Refiners Association, Tulsa.

Directors: H. T. Ashton, vice-president, Lubrite Refining Co., St. Louis; V. E. Bolene, president, Bolene Refining Co., Enid, Oklahoma; D. E. Buchanan, vice-president, Chestnut & Smith Corp., Tulsa; W. K. Campbell, president, Western Oil Corporation, Tulsa; S. C. Collins, vice-president, Marland Refining Co., Ponca City; L. R. Crawford, vice-president, Producers & Refiners Corp., Denver; A. L. Derby, president, Derby Oil Company, Wichita, Kansas; E. H. Eddleman, vice-president, Texhoma Oil & Refining Co., Wicihta Falls; A. F. Garrett, sales manager, Tidal Refining Co., Tulsa; C. E. Gerteis, superintendent , White Star Refining Co., Detroit; E. W. Goebel, general manager, Manhattan Oil Co., Kansas City; J. L. Gray, vice-president, Shaffer Oil & Refining Co., Tulsa; R. R. Irwin, vice-president, White Eagle Oil & Refining Co., Kansas City; Elliott Jones, president, Elliott Jones & Co., San Antonio; A. E. Landsittle, sales manager, Glove Oil & Refining Co., Tulsa; E. D. Levy, president, Pierce Petroleum Corp., St. Louis; L. B. McCammon, vice-president, Transcontinental Oil Co., Tulsa; C. L. Mayhall, vice-president, Imperial Refining Co., Tulsa; J. H. Miller, president, Miller Petroleum Co., Kansas City; D. W. Moffitt, vice-president, Mid-Continent Petroleum Corp., Tulsa; C. C. Peppers, president, Peppers Gasoline Company, Enid; F. A. Pielsticker, vice-president, Skelly Oil Co., Eldorado, Kansas; J. E. Shatford, president, Ouachita Valley Refining Co., El Dorado, Arkansas; H. A. Trower, sales manager, Phillips Petroleum Co., Bartlesville; J. L. Walsh, sales manager, Continental Oil Co., Kansas City; G. G. Woodruff, sales manager, Roxana Petroleum Corp., St. Louis.

E. H. EDDLEMAN
Director, Western Petroleum Refiners' Association and vice-president of the Texhoma Oil & Refining Company

Executive Committee: P. M. Miskell, Roy B. Jones, George D. Locke, C. L. Henderson, H. T. Ashton, D. E. Buchanan, S. C. Sollins, E. W. Goebel, Elliott Jones and J. H. Miller.

Standing Committees

Manufacturers Committee: C. L. Henderson, chairman, Vickers Petroleum Co., Wichita, Kansas; F. B. Koontz, Mid-Continent Petroleum Corp., Tulsa; H. W. Camp, Empire Refineries, Inc., Tulsa; Walter Miller, Marland Refining Co., Ponca City; Dr. F. W. L. Tydeman, Roxana Petroleum Corp., St. Louis; W. E. Moody, Shaffer Oil & Ref. Co., Cushing; F. E. Holsten, Barnsdall Refineries, Inc., Tulsa; L. F. Bayer, Tidal Refining Co., Tulsa; H. T. Ashton, Lubrite Refining Co., St. Louis; W. E. Perdew, Derby Oil Company, Wichita, Kansas; W. F. Simms, Panhandle Refining Co., Wichita Falls; J. A. Satori, Producers & Refiners Corp., Tulsa; J. M. Wadsworth, Pierce Petroleum Corp., Sand Springs, Okla.; Dr. E. R. Lederer, Texas Pacific Coal & Oil Co., Fort Worth; W. E. Twitchell, Independent Oil & Gas Co., Okmulgee.

Traffic Committee: R. R. Irwin, chairman, White Eagle Oil & Ref. Co., Kansas City; H. W. Roe, Mid-Continent Petroleum Corp., Tulsa; A. C. Holmes, Empire Refineries, Inc., Tulsa; H. C. Mulroy, Marland Refining Co., Ponca City; W. M. Powers, Lubrite Refining Co., St. Louis; A. F. Winn, Skelly Oil Co., Tulsa; B. J. Burchett, Shaffer Oil & Ref. Co., Chicago; Earl Smith, Oil State Refining Co., Enid, Okla.; L. B. Lea, Pierce Petroleum Corp., St. Louis.

Finance Committee: George D. Locke, chairman, Barnsdall Refineries, Inc., Chicago; Roy B. Jones, Panhandle Refining Co., Wichita Falls, Texas; C. L. Henderson, Vickers Petroleum Co., Wichita, Kansas.

Membership Committee: J. H. Miller, chairman, Miller Petroleum Co., Kansas City; E. W. Goebel, vice-president Manhattan Oil Co., Kansas City; John L. Gray, Shaffer Oil & Ref. Co., Tulsa; E. H. Eddleman, Texhoma Oil & Ref. Co., Wichita Falls; C. L. Mayhall, Imperial Refining Co., Tulsa; A. E. Landsittel, Globe Oil & Refining Co., Tulsa; W. K. Campbell, Western Oil Corporation, Wichita Falls.

J. E. SHATFORD
Director, Western Petroleum Refiners' Association; also president of the Ouachita Valley Refining Company

E. D. LEVY
Director, Western Petroleum Refiners' Association and president of the Pierce Oil Corporation

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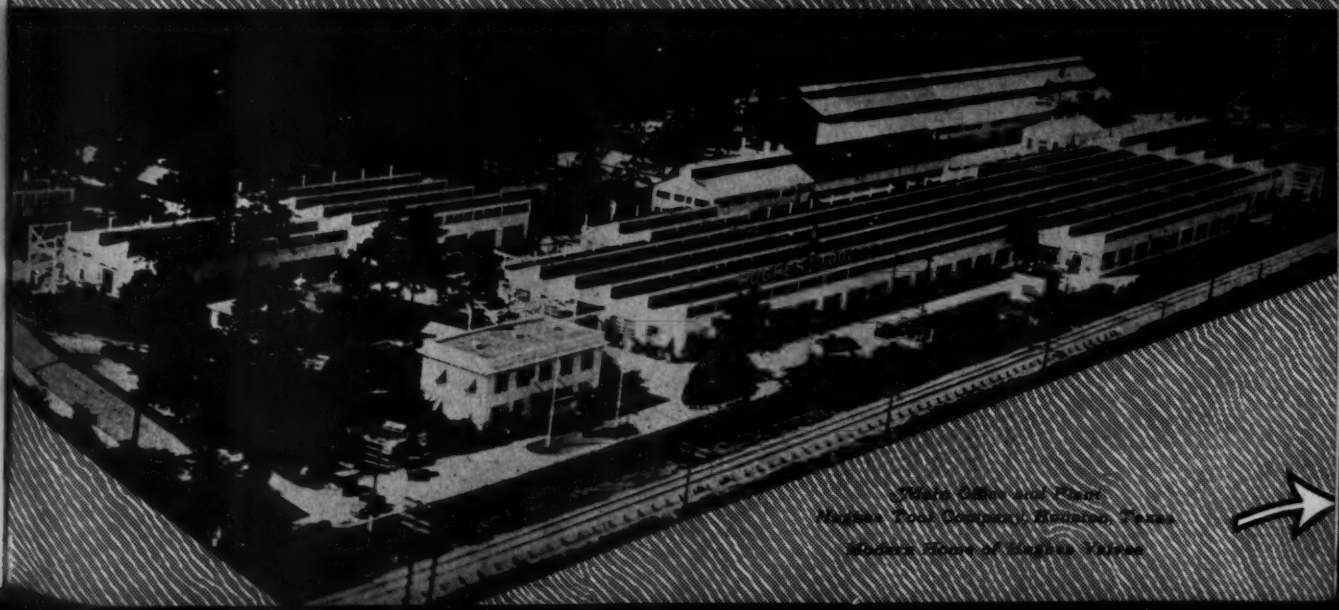

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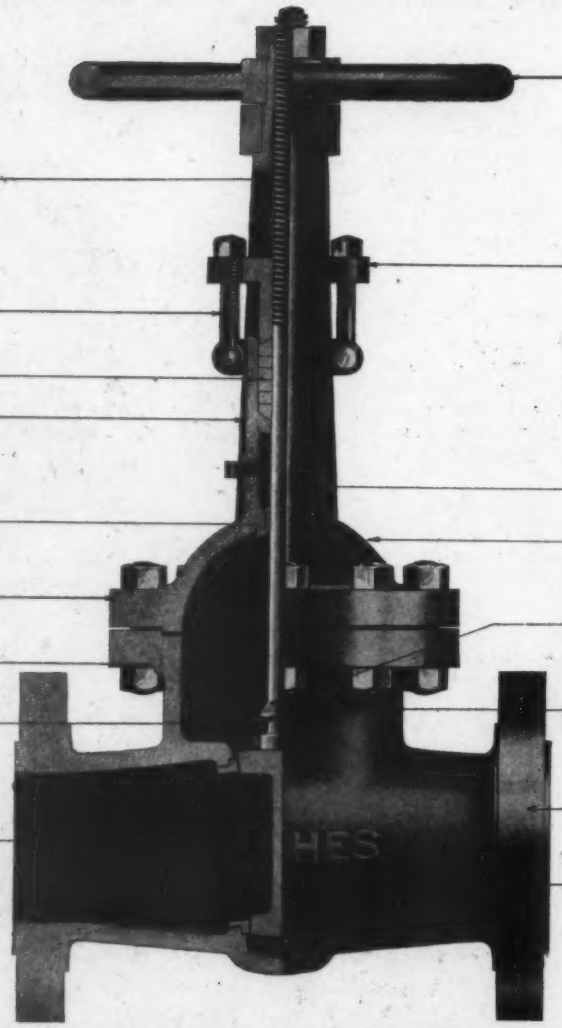

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REFINERY AND NATURAL GASOLINE PLANT
EQUIPMENT BUYERS' GUIDE
1926

THE following pages give a complete list of all equipment used in refineries and natural gasoline plants together with the name and address of recognized manufacturers and dealers. They contain information that is invaluable to those buying equipment for this branch of the Petroleum Industry.

The BUYERS' GUIDE is compiled annually by the editorial staff of The Refiner and Natural Gasoline Manufacturer under the supervision of A. R. McTee. No expense is spared in securing complete and authentic information and in arranging the Guide for the convenience of refiners and gasoline plant men. However, it is only through the close co-operation of the many manufacturers and dealers that such a Guide is available.

The value of the Guide to you will be determined by the use you make of it. It is urged that it be kept handy for easy reference whenever plant equipment purchases are to be made.

Directions for Use

Information in the Guide has been arranged according to products, classified under their most common and accepted names and using the main noun as the key index word. However, exceptions have been made to the latter in cases where equipment is more generally known by a combination of words. All concerns listed in the Guide who have advertisements in this issue of The Refiner and Natural Gasoline Manufacturer have references to the pages on which their advertisements appear. Much valuable information can be secured by following these references.

PLANT EQUIPMENT BUYERS' GUIDE

ABSORBERS

The Adsole Co. of America, 201 Los Angeles City Club Bldg., Los Angeles, Cal.
American Tank Co., Okla. City, Okla.
Beach-Russ Co., 30 Church St., New York, N. Y.
C. F. Braun & Co., Alhambra, Cal. See pages 78-79.
Carbondale Machine Co., Carbondale, Pa.
J. P. Devine Co., 1380 Clinton, Buffalo, N. Y.
Fort Worth Steel & Machinery Co., Fort Worth, Texas
Dean E. Foster, New Wright Bldg., Tulsa, Okla.
Gasoline Recovery Corp., Peoples Bank Bldg., Charleston, W. Va.
Griscom-Russell Co., 285 Madison Ave., New York, N. Y. See page 133.
Hope Engineering & Supply Co., Mount Vernon, Ohio
Kansas City Structural Steel Co., Kansas City, Kansas.
McAleenan Bros. Co., Twenty-fifth and Railroad, Pittsburgh, Pa.
Mount Cooper Boiler & Iron Co., Tulsa, Okla.
Newton Process Mfg. Co., Fullerton, California.
New York Engineering Co., 2 Rector St., New York, N. Y.
Pioneer Tank & Boiler Co., Box 1926, Tulsa, Okla. See page 157.
Riter-Conley Co., Oliver Bldg., Pittsburgh, Pa.
Southwestern Engineering Co., Hollingsworth Bldg., Los Angeles, Cal. See page 109.
Tracy Engineering Co., 479-485 Sixth St., San Francisco, Calif.
Tulsa Boiler & Machinery Co., P. O. Box 1963, Tulsa, Okla.
United Iron Works Co., Ridge Arcade Bldg., Kansas City. Mo. See page 161.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

ABSORBERS, Ammonia

York Manufacturing Co., York, Pa. See page 143.

ABSORBERS, Charcoal Gasoline Plants

Gasoline Recovery Corp., Peoples Bank Bldg., Charleston, W. Va.

ACETYLENE APPARATUS

Air Reduction Sales Co., 342 Madison Ave., New York, N. Y.
The Alexander Milburn Co., 1416 W. Baltimore St., Baltimore, Md.
Brazelton, Wessendorff & Nelms, Houston, Texas
Burdett Mfg. Co., 309 St. Johns Court, Chicago, Ill.
Carbic Mfg. Co., Duluth, Minn.
Diamond Rubber Co., Inc., Akron, Ohio.
Henderson-Willis Welding & Cutting Co., 2305-09 N. Eleventh St., St. Louis, Mo.
MacLeod Company, Cincinnati, Ohio
Magnoila Gas Porducts Co., Houston, Tex.
Modern Engineering Co., 3411-13 Pine Blvd., St. Louis, Mo. See page 141.
Oxweld Acetylene Co., Long Island City, L. I. N. Y.
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
Smiths Inventions, Inc., 2636 Fourth St., S.E., Minneapolis, Minn.
Torchweld Equipment Co., 224 No. Carpenter St., Chicago, Ill.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

ACETYLENE, Dissolved

The Prest-O-Lite Co., Inc., 810 Kirby Bldg., Dallas, Texas.

ACCUMULATORS

American Tank Co., Okla. City, Okla.
C. F. Braun & Co., Alhambra, Cal. See pages 78-79.
The Burroughs Co., 246 N. Tenth St., Newark, N. J.
Erie City Iron Works, Erie, Pa.
Finucane Boiler Works, Houston, Texas.
Dean E. Foster, New Wright Bldg., Tulsa, Okla.
Kansas City Structural Steel Co., Kansas City, Kansas.
Mesta Machine Co., Pittsburgh, Pa.
Oil Well Supply Co., Pittsburgh, Pa.
Pioneer Tank & Boiler Co., Box 1926, Tulsa, Okla., See Page 157.
Pittsburgh Pipe Coil & Bending Co., 61 Bridge St., Etna, Pa.
Riter-Conley Co., Oliver Bldg., Pittsburgh, Pa.
Joseph T. Ryerson & Sons, 2558 W. 16th St., Chicago, Ill.
Tulsa Boiler & Machinery Co., P. O. Box 1963, Tulsa, Okla.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo.
Walsh & Weidner Boiler Co., 357 Humble Bldg., Houston, Texas.

AERATORS

Allen & Billmyre Co., Inc., Grand Central Palace, New York City, N. Y.
Fort Worth Steel & Machinery Co., Fort Worth, Texas
Griscom-Russell Co., 285 Madison Ave., New York, N. Y. See page 133.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.

AFTERCOOLERS

Arctic Ice Machine Co., Canton, Ohio
C. F. Braun & Co., Alhambra, Cal. See pages 78-79.
Chicago Pneumatic Tool Co., 6 E. 44th St., New York, N. Y.
Croll-Reynolds Eng'rg. Co., Inc., 95 Liberty St., New York, N. Y.
J. P. Devine Co., 1380 Clinton, Buffalo, N. Y.
Erie City Iron Works, Erie, Pa.
Fort Worth Steel & Machinery Co., Fort Worth, Texas
Dean E. Foster, New Wright Bldg., Tulsa, Okla.
Griscom-Russell Co., 285 Madison Ave., New York, N. Y. See page 133.
Ingersoll-Rand Co., 11 Broadway, New York, N. Y.
National Pipe Bending Co., New Haven, Conn.
Oil Well Supply Co., Pittsburgh, Pa.
Riter-Conley Co., Oliver Bldg., Pittsburgh, Pa.
Schutte & Koerting Co., 1165 Thompson St., Philadelphia, Pa. See page 149.
Southwestern Engineering Co., Hollingsworth Bldg., Los Angeles, Cal. See page 109.
Tennant Co., Union National Bank Bldg., Houston, Texas.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Whitlock Coil Pipe Co., Hartford, Conn.

AGITATORS

Arctic Ice Machine Co., Canton, Ohio
Baker Ice Machine Co., 3601 Evans St., Omaha, Nebr.
Beach-Russ Co., 30 Church St., New York, N. Y.
Blaw-Knox Co., Pittsburgh, Pa.
Chicago Bridge & Iron Works, 37 Van Buren St., Chicago, Ill. See page 148.
Columbian Steel Tank Co., 1401-1631 W. Twelfth St., Kansas City, Mo.
Cross Engineering Co., 700 Baltimore Ave., Kansas City, Mo. See page 129.
J. P. Devine Co., 1380 Clinton, Buffalo, N. Y.
John Dollinger, Jr., Inc., Box 423, Beaumont, Texas
Erie City Iron Works, Erie, Pa.
Fort Worth Steel & Machinery Co., Fort Worth, Texas
Graver Corp., 414 Todd Ave., E. Chicago, Ind. See page 13.
Hardinge Co., Inc., York, Pa.
The Hill Clutch Machine & Foundry Co., Cleveland, Ohio
Kansas City Structural Steel Co., Kansas City, Kansas.
The Kaw Boiler Works Co., Kansas City, Kans. See page 117.
Leader Iron Works, Decatur, Ill.
Arthur G. McKee & Co., 2422 Euclid Ave., Cleveland, Ohio
Mount Cooper Boiler & Iron Co., Tulsa, Okla.
Petroleum Iron Works, Sharon, Pa.
Pioneer Tank & Boiler Co., Box 1926, Tulsa, Okla. See page 157.
Pittsburgh-Des Moines Steel Co., 942 Curry Bldg., Pittsburgh, Pa.
Premier Mill Corporation, Geneva New York.
Riter-Conley Co., Oliver Bldg., Pittsburgh, Pa.
Sowers Mfg. Co., 1294 Niagara St., Buffalo, N. Y.
Tennant Co., Union National Bank Bldg., Houston, Texas.
M. H. Treadwell Co. of Ill., 208 So. La Salle St., Chicago, Ill.
Tulsa Boiler & Machinery Co., P. O. Box 1963, Tulsa, Okla.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Walsh & Weidner Boiler Co., 357 Humble Bldg., Houston, Texas.
The Widdell Engineering Co., 512 American Bk. Bldg., Kansas City, Mo.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

AGITATORS, Lead Lined

United Lead Co., 111 Broadway, New York, N. Y.

ALARMS—Water Motor (Sprinkler)

Central Automatic Sprinkler Co., 5145 Delancey St., Philadelphia, Pa.

ALTERNATORS

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Crocker-Wheeler Electric Mfg. Co., Ampere, N. J.
Engberg's Electric & Mechanica Works, 268 Vine St., St. Joseph, Mich.
Fairbanks, Morse & Co., 900 S. Wabash Ave., Chicago, Ill.
Fort Worth Steel & Machinery Co., Fort Worth, Texas.
Ridgway, Dynamo & Engine Co., Ridgway, Pa.
Roth Bros. & Co., 1400 W. Adams St., Chicago, Ill
Southern Engine & Pump Co., Houston, Texas

ALUMINUM POWDER

Burdett Mfg. Co., 309 St. Johns Court, Chicago, Ill.

AMMETERS AND MILLI-AMMETERS

The Bristol Co., Waterbury, Conn. See page 154.
Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
The Esterline-Angus Co., P. O. Box 596, Indianapolis, Ind.
Greene Brothers, Wichita Falls, Texas. See page 61.
Illinois Testing Laboratories, Inc., 141-143 W. Austin Ave., Chicago, Ill.
Langstadt-Meyer Co., Appleton, Wis.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

ANALYZERS, Gas

Brown Instrument Co., 4537 Wayne Ave., Philadelphia, Pa.
Defender Automatic Regulator Co., 709 Pine St., St. Louis, Mo.
Fort Worth Laboratories, 828½ Monroe St., Ft. Worth, Texas. See page 158.
Greene Brothers, Wichita Falls, Texas. See page 61.
Jos. W. Hays Corp., 1042 E. 8th St., Michigan City, Ind.
Paul B. Huyette Co., Inc., 5 South Eighteenth St., Philadelphia, Pa.
Refinery Supply Co., Tulsa, Okla. See page 44.
C. J. Tagliabue Mfg. Co., 18 33rd St., Brooklyn, N. Y. See page 49.
Uehling Instrument Co., 475 Getty Ave., Paterson, N. J.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.
York Manufacturing Co., York, Pa. See page 143.

ANALYSERS, Flue Gas

Jos. W. Hays Corp., 1042 E. 8th St., Michigan City, Ind.

ANCHORS, Pipe

The Acme Tank Car Co., Coffeyville, Kansas
National Valve & Mfg. Co., 31st and Liberty, Pittsburgh, Pa.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Wheeler Condenser & Engineering Corp., 149 Broadway, N. Y., N.Y

ANEMOMETERS

Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
Davis Instrument Mfg. Co., 110 W. Fayette St., Baltimore, Md.
Fort Worth Laboratories, 828½ Monroe St., Ft. Worth, Texas. See page 158.
Julien P. Friez & Sons, Baltimore St. & Central Ave., Baltimore, Md.
Henry J. Green, 1191 Bedford Ave., Brooklyn, N. Y.
Keuffel & Esser Co., Hoboken, N. J.
Taylor Instrument Co., Rochester, N. Y. See page 160.
Williams, Brown & Earle, 918 Chestnut St., Philadelphia, Pa. See page 157.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

APPARATUS, Aluminum

Aluminum Co. of America, 2400 Oliver Bldg., Pittsburgh, Pa.
J. P. Devine Co., 1380 Clinton, Buffalo, N. Y.
Greene Brothers, Wichita Falls, Texas. See page 61.
Arthur Harris & Co., 212 Curtis St., Chicago, Ill.

ARC WELDERS, Electric

Henderson-Willis Welding & Cutting Co., 2305-09 N. Eleventh St., St. Louis, Mo.

ARCHES, Boiler

The Acme Tank Car Co., Coffeyville, Kansas
Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
The Brady Conveyors Corp., 20 W. Jackson Blvd., Chicago, Ill.
Briggs Weaver Machinery Co., Dallas, Texas
Burke Engineering Co., Holland, Mich.
Chicago Retort & Fire Brick Co., 208 S. La Salle St., Chicago, Ill.
Chicago Tile Arch Furnace Co., 2600-10 W. Grand Ave., Chicago, Illinois
Cross Engineering Co., 700 Baltimore Ave., Kansas City, Mo. See page 129.
M. H. Detrick Co., 140 So. Dearborn St., Chicago, Ill.
Eureka Fire Brick Works, 1507 First Nat. Bank Bldg., Pittsburgh, Pa.
Evens & Howard Fire Brick Co., 920 Market St., St. Louis, Mo.
A. P. Green Fire Brick Co., Mexico, Mo.
T. K. Harris, Polytechnic Station, Fort Worth, Texas.
Hartwell Iron Works, Houston, Texas
Heine Boiler Co., St. Louis, Mo.
Lamprey Co., Westfield, Mass.
Liptak Fire-Brick Arch Co., Mexico, Mo.
McLeod & Henry Co., Troy, N. Y.
Milwaukee Boiler Mfg. Co., 35th St. & National Ave., Milwaukee, Wis.
S. Obermayer Co., 2563 W. 18th St. Chicago, Ill.
Oil Well Supply Co., Pittsburgh, Pa.
H. A. Paine Co., 419-20 Cotton Exchange Bldg., Houston, Texas.
Quinn & Co., 1347 Harrison Ave., Cincinnati, Ohio

Sculley Steel & Iron Co., Chicago, Ill.
Sprague Foundry & Mfg. Co., P. O. Box 334, Council Bluffs, Iowa
Standard Fuel Engr'g Co., 667-687 Post Ave., So. Detroit, Mich.
Steam Boiler Equipment Co., 1750 Monadnock Block, Chicago, Ill.
Union Iron Works, Selma, Ala.
Walsh Fire Clay Products Co., 4073 N. Main St., St. Louis, Mo. See page 113.
C. J. Walton & Son, 1221 W. Main St., Louisville, Ky.
Wellsville Fire Brick Co., Wellsville, Mo.
Western Iron & Foundry Co., Wichita, Kans. See page 89.

ARCHES, Combustion Chamber

Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
The Brady Conveyors Corp., 20 W. Jackson Blvd., Chicago, Ill.
Burke Engineering Co., Holland, Mich.
Chicago Retort & Fire Brick Co., 208 S. La Salle St., Chicago, Ill.
Chicago Tile Arch Furnace Co., 2600-10 W. Grand Ave., Chicago, Illinois
Cross Engineering Co., 700 Baltimore Ave., Kansas City, Mo. See page 129.
M. H. Detrick Co., 140 So. Dearborn St., Chicago, Ill.
Eureka Fire Brick Works, 1507 First Nat. Bank Bldg., Pittsburgh, Pa.
Evens & Howard Fire Brick Co., 920 Market St., St. Louis, Mo.
A. P. Green Fire Brick Co., Mexico, Mo.
Green Engineering Co., E. Chicago, Ind.
T. K. Harris, Polytechnic Station, Fort Worth, Texas.
Hartwell Iron Works, Houston, Texas
Liptak Fire-Brick Arch Co., Mexico, Mo.
McLeod & Henry Co., Troy, N. Y.
S. Obermayer Co., 2563 W. 18th St. Chicago, Ill.
H. A. Paine Co., 419-20 Cotton Exchange Bldg., Houston, Texas.
Quinn & Co., 1347 Harrison Ave., Cincinnati, Ohio
Standard Fuel Engr'g Co., 667-687 Post Ave., So. Detroit, Mich.
Steam Boiler Equipment Co., 1750 Monadnock Block, Chicago, Ill.
Walsh Fire Clay Products Co.,4073 N. Main St., St. Louis, Mo. See page 113.
C. J. Walton & Son, 1221 W. Main St., Louisville, Ky.
Wellsville Fire Brick Co., Wellsville, Mo.
Western Iron & Foundry Co., Wichita, Kans. See page 89.

ARCHES, Fire Door

The Acme Tank Car Co., Coffeyville, Kansas
Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
Barnhart-Davis Co., Warren, Pa.
The Brady Conveyors Corp., 20 W. Jackson Blvd., Chicago, Ill.
Briggs Weaver Machinery Co., Dallas, Texas
Chicago Retort & Fire Brick Co., 208 S. La Salle St., Chicago, Ill.
Cross Engineering Co., 700 Baltimore Ave., Kansas City, Mo. See page 129.
M. H. Detrick Co., 140 So. Dearborn St., Chicago, Ill.
Eureka Fire Brick Works, 1507 First Nat. Bank Bldg., Pittsburgh, Pa.
Evens & Howard Fire Brick Co., 920 Market St., St. Louis, Mo.
A. P. Green Fire Brick Co., Mexico, Mo.
T. K. Harris, Polytechnic Station, Fort Worth, Texas.
Hartwell Iron Works, Houston, Texas
Heine Boiler Co., St. Louis, Mo.
Lamprey Co., Westfield, Mass.
McLeod & Henry Co., Troy, N. Y.
Milwaukee Boiler Mfg. Co., 35th St. & National Ave., Milwaukee, Wis.
S. Obermayer Co., 2563 W. 18th St. Chicago, Ill.
Oil Well Supply Co., Pittsburgh, Pa.
Sprague Foundry & Mfg. Co., P. O. Box 334, Council Bluffs, Iowa
Standard Fuel Engr'g Co., 667-687 Post Ave., So. Detroit, Mich.
Steam Boiler Equipment Co., 1750 Monadnock Block, Chicago, Ill.
Union Iron Works, Selma, Ala.
Walsh Fire Clay Products Co., 4073 N. Main St., St. Louis, Mo. See page 113.
C. J. Walton & Son, 1221 W. Main St., Louisville, Ky.
Wellsville Fire Brick Co., Wellsville, Mo.
Western Iron & Foundry Co., Wichita, Kans. See page 89.

ARCHES, Flat Suspended

The Brady Conveyors Corp., 20 W. Jackson Blvd., Chicago, Ill.
Burke Engineering Co., Holland, Mich.
Chicago Tile Arch Furnace Co., 2600-10 W. Grand Ave., Chicago, Illinois
Cross Engineering Co., 700 Baltimore Ave., Kansas City, Mo. See page 129.
M. H. Detrick Co., 140 So. Dearborn St., Chicago, Ill.
A. P. Green Fire Brick Co., Mexico, Mo.
Green Engineering Co., E. Chicago, Ind.
T. K. Harris, Polytechnic Station, Fort Worth, Texas.
Laclede-Christy, St. Louis, Mo.
McLeod & Henry Co., Troy, N. Y.
S. Obermayer Co., 2563 W. 18th St. Chicago, Ill.
H. A. Paine Co., 419-20 Cotton Exchange Bldg., Houston, Texas.
Quinn & Co., 1347 Harrison Ave., Cincinnati, Ohio
Standard Fuel Engr'g Co., 667-687 Post Ave., So. Detroit, Mich.
Walsh Fire Clay Products Co., 4073 N. Main St., St. Louis, Mo. See page 113.
Wellsville Fire Brick Co., Wellsville, Mo.

ARRESTORS, Flame

Oil Conservation Engineering Co., Cleveland, Ohio. See page 4.

ARRESTERS, Lightning

General Electric Co., Schenectady, New York
U. T. Hungerford Brass & Copper Co., 80 Lafayette St., New York, N. Y.
Peden Iron & Steel Co., Houston, Texas. See page 85.

ASBESTOS PRODUCTS

Acme Asbestos Cov. & Supply Co., 2442 N. Elizabeth St., Chicago, Ill.
Anchor Packing Co., Lafayette Bldg., Philadelphia, Pa.
R. V. Aycock Co., Kansas City, Mo.
Briggs Weaver Machinery Co., Dallas, Texas
Stewart R. Browne Mfg. Co., New York, N. Y.
Continental Supply Co., St. Louis, Missouri
The Darcoid Co., 55 Warren St., New York, N. Y.
Diamond Rubber Co., Inc., Akron, Ohio.
Ehret Magnesia Mfg. Co., 20 E. Jackson Blvd., Chicago, Ill.
Ehrot Magnesia Mfg. Co., Valley Forge, Pa.
Fort Worth Steel & Machinery Co., Fort Worth, Texas
Garlock Packing Co., 50 Main St., Palmyra, N. Y. See page 67.
General Asbestos & Rubber Co., Charleston, S. C.
Goetze Gasket & Packing Co., New Brunswick, N. J. See page 145.
Greene Brothers, Wichita Falls, Texas. See page 61.
Janos Asbestos Co., 26 Cortlandt St., New York, N. Y.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Johns-Manville Inc., 292 Madison Ave., New York, N. Y.
Keasbey & Mattison Co., Ambler, Pa.
Geo. W. Knowlton Rubber Co., 60 Pearl St., Boston, Mass.
La Favorite Rubber Mfg. Co., Wagaraw Rd., Hawthorne, N. J.
Langstadt-Meyer Co., Appleton, Wis.
National Supply Co., Toledo, Ohio
Nitingale & Childs Co., 195 Albany St., Cambridge Sta., Boston, Mass.
Norristown Mangesia & Asbestos Co., Norristown, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Philip Carey Co., Cincinnati, Ohio
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
Rogers Asbestos Co., Houston, Texas.
Standard Asbestos Mfg. Co., 820-22 West Lake St., Chicago, Ill.
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
Texas Belting Co., Houston, Texas.
Walworth Company, 88 Pearl St., Boston, Mass.
Witherup Cork Packing Co., Beaumont, Texas.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

B

BABBITT

Geo. B. Allen & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
Brazelton, Wessendorff & Nelms, Houston, Texas
Briggs Weaver Machinery Co., Dallas, Texas
A. W. Cadman Mfg. Co., 2814 Smallman St., Pittsburgh, Pa.
Continental Supply Co., St. Louis, Missouri
The Wm. Cramp & Sons Ship & Engine Bldg. Co., Richmond & Norris Sts., Philadelphia, Pa.
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
The Eagle-Picher Lead Co., 208 S. LaSalle St., Chicago, Ill.
Frictionless Metal Co., 1450-60 Collins St., St. Louis, Mo.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Hoyt Metal Co., Boatman's Bank Bldg., St. Louis, Mo.
U. T. Hungerford Brass & Copper Co., 80 Lafayette St., New York, N. Y.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
National Supply Co., Toledo, Ohio
Oil Well Supply Co., Pittsburgh, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Petroleum Supply Co., Houston, Texas
Plouff Co., 170 Summer St., Boston, Mass.
Joseph T. Ryerson & Sons, 2558 W. 16th St., Chicago, Ill.
Sculley Steel & Iron Co., Chicago, Ill.
John Simmons Co., 104-10 Center St., New York, N. Y.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
Union Iron Works, Selma, Ala.
Western Iron & Foundry Co., Wichita, Kansas. See page 89.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

BABBITTING OUTFITS

Barnhart-Davis Co., Warren, Pa.
Brazelton, Wessendorff & Nelms, Houston, Texas
Briggs Weaver Machinery Co., Dallas, Texas
Eclipse Fuel Engineering Co., Rockford, Ill.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Pittsburgh White Metal Co., 160 Leroy St., New York, N. Y.
Plouff Co., 170 Summer St., Boston, Mass.

BAFFLES, Absorber

Dean E. Foster, New Wright Bldg., Tulsa, Okla.

BAFFLES, Boilers

American Chimney Corp., 147 Fourth Ave., New York, N. Y.
Boiler Engineering Co., 760 Broad St., Newark, N. J.
Chicago Retort & Fire Brick Co., 208 S. La Salle St., Chicago, Ill.
Eureka Fire Brick Works, 1507 First Nat. Bank Bldg., Pittsburgh, Pa.
A. P. Green Fire Brick Co., Mexico, Mo.
Harbison Walker Refractories Co., Farmers' Bank Bldg., Pittsburgh
Heine Boiler Co., St. Louis, Mo.
Jas. G. Heggie & Sons, Joliet, Ill.
E. Keeler Co., Williamsport, Pa.
E. Leonard & Sons, Ltd., York St., London, Canada.
McLeod & Henry Co., Troy, N. Y.
H. A. Paine Co., 419-20 Cotton Exchange Bldg., Houston, Texas.
Plibrico Jointless Fire Brick Co., 1130 Clay St., Chicago, Ill. See page 9.
Quigley Furnace Specialties Co., 25 Church St., New York, N. Y.
Standard Fuel Engr'g Co., 667-687 Post Ave., So. Detroit, Mich.
Steam Boiler Equipment Co., 1750 Monadnock Block, Chicago, Ill.
Henry Vogt Machine Co., Louisville, Ky. See page 5.
Wellsville Fire Brick Co., Wellsville, Mo.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

BAFFLES, Refractory

Briggs Weaver Machinery Co., Dallas, Texas
Chicago Retort & Fire Brick Co., 208 S. La Salle St., Chicago, Ill.
M. H. Detrick Co., 5319 Marcus Ave., St. Louis, Mo.
Eclipse Fuel Engineering Co., Rockford, Ill.
Engineer Co., 17 Battery Place, way, New York, N. Y.
Eureka Fire Brick Works, 1507 First Nat. Bank Bldg., Pittsburgh, Pa.
Evens & Howard Fire Brick Co., 920 Market St., St. Louis, Mo.
A. P. Green Fire Brick Co., Mexico, Mo.
Harbison Walker Refractories Co., Farmers' Bank Bldg., Pittsburgh
T. K. Harris, Polytechnic Station, Fort Worth, Texas.
Heine Boiler Co., St. Louis, Mo.
Maintenance Eng. Corp., 1802 Conti St., Houston, Texas. See page 150.
McAleenan Bros. Co., Twenty-fifth and Railroad, Pittsburgh, Pa.
McLeod & Henry Co., Troy, N. Y.
H. A. Paine Co., 419-20 Cotton Exchange Bldg., Houston, Texas.
Pioneer Tank & Boiler Co., Box 1926, Tulsa, Okla. See page 157.
Quigley Furnace Specialties Co., 25 Church St., New York, N. Y.
Standard Fuel Engr'g Co., 667-687 Post Ave., So. Detroit, Mich.
Steam Boiler Equipment Co., 1750 Monadnock Block, Chicago, Ill.
Wellsville Fire Brick Co., Wellsville, Mo.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

BAFFLE, WALLS

Boiler Engineering Co., 760 Broad St., Newark, N. J.
Engineer Co., 17 Battery Place, New York, N. Y.
Eureka Fire Brick Co., 1507 First Nat. Bank Bldg., Pittsburgh, Pa.
Fort Worth Steel & Machinery Co., Fort Worth, Texas
A. P. Green Fire Brick Co., Mexico, Mo.
T. K. Harris, Polytechnic Station, Fort Worth, Texas.
Heine Boiler Co., St. Louis, Mo.
Johns-Manville Inc., 292 Madison Ave., New York, N. Y.
Maintenance Eng. Corp., 1802 Conti St., Houston, Texas. See page 150.
McLeod & Henry Co., Troy, N. Y.
S. Obermayer Co., 2563 W. 18th St. Chicago, Ill.
H. A. Paine Co., 419-20 Cotton Exchange Bldg., Houston, Texas.
Quigley Furnace Specialties Co., 25 Church St., New York, N. Y.
Standard Fuel Engr'g Co., 667-687 Post Ave., So. Detroit, Mich.
Steam Boiler Equipment Co., 1750 Monadnock Block, Chicago, Ill.
Wellsville Fire Brick Co., Wellsville, Mo.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

BALANCES, Analytical

Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Fort Worth Laboratories, 828½ Monroe St., Ft. Worth, Texas. See page 158.
Greene Brothers, Wichita Falls, Texas. See page 61.
Emil Greiner Co., 55 Fulton St., New York, N. Y.
Griebel Instrument Co., Carbondale, Pa.
Refinery Supply Co., Tulsa, Okla. See page 44.

Arthur H. Thomas Co., W. Washington Square, Philadelphia, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

BALANCES, Spring

Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
Greene Brothers, Wichita Falls, Texas. See page 61.
Griebel Instrument Co., Carbondale, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

BAROMETERS

Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Defender Automatic Regulator Co., 709 Pine St., St. Louis, Mo.
Fort Worth Laboratories, 828½ Monroe St., Ft. Worth, Texas. See page 158.
Julien P. Friez & Sons, Baltimore St. & Central Ave., Baltimore, Md.
Henry J. Green, 1191 Bedford Ave., Brooklyn, N. Y.
Greene Brothers, Wichita Falls, Texas. See page 61.
Griebel Instrument Co., Carbondale, Pa.
Kolesch & Co., 138 Fulton St., New York, N. Y.
F. J. Low Co., Inc., 15 W. 44th St., New York, N. Y.
The C. F. Pease Co., 866 N. Franklin St., Chicago, Ill.
Refinery Supply Co., Tulsa, Okla. See Page 44.
C. J. Tagliabue Mfg. Co., 18 33rd St. Brooklyn, N. Y. See page 49.
Taylor Instrument Co., Rochester, N. Y. See page 160.
Carl H. Wagner, 1944 W. Albany Ave., Chicago, Ill.
Williams, Brown & Earle, 918 Chestnut St., Philadelphia, Pa. See page 149
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

BARRELS

American Steel Package Co., Defiance, Ohio.
Butler Mfg. Co., 1124 Grand Ave., Kansas City, Mo.
Columbian Steel Tank Co., 1401-1631 W. Twelfth St., Kansas City, Mo.
C. G. Hopkins Cooperage Co., Joplin, Mo.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Pekin Cooperage Co., 330 Spring St., New York, N. Y.
Peekin Cooperage Co., Port Arthur, Texas.
Petroleum Iron Works, Sharon, Pa.
Refinery Supply Co., Tulsa, Okla. See page 44.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

BARS, Grate

Barnhart-Davis Co., Warren, Pa.
Brass Foundry & Machine Co., Fort Wayne, Ind.
Briggs Weaver Machinery Co., Dallas, Texas
Burke Engineering Co., Holland, Mich.
D. M. Dillon Steam Boiler Works, Fitchburg, Mass.
Green Engineering Co., E. Chicago, Ind.
Greenlee Foundry Co., 662 W. Roosevelt Rd., Chicago, Ill.
Hartwell Iron Works, Houston, Texas
Heine Boiler Co., St. Louis, Mo.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Ideal Foundry & Machinery Co., Beaver Falls, Pa.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Marion Machine, Foundry & Supply Co., Box 685, Marion, Ind.
McEwen Bros., Wellsville, N. Y.
Moloch Co., Kaukauna, Wis.
Nute, McGehee, Geary Co., Chambersburg, Pa.
Oil Well Supply Co., Pittsburgh, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Prospect Boiler Co., Ward St. and Raritan River R. R., New Brunswick, N. J.
Quinn & Co., 1347 Harrison Ave., Cincinnati, Ohio
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
Rogers Foundry & Machine, Joplin, Mo.
John Simmons Co., 104-10 Center St., New York, N. Y.
Sprague Foundry & Mfg. Co., P. O. Box 334, Council Bluffs, Iowa
The Stanwood Corp., Cincinnati, O.
M. H. Treadwell Co. of Ill., 208 S. La Salle St., Chicago, Ill.
Union Iron Works, Selma, Ala.
C. J. Walton & Son, 1221 W. Main St., Louisville, Ky.
Western Iron & Foundry Co., Wichita, Kansas. See page 89.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

BARS, Reinforcing Concrete Work

Bethlehem Steel Co., Bethlehem, Pa.
Carnegie Steel Co., Carnegie Bldg., Pittsburgh, Pa.
Fort Worth Steel & Machinery Co., Fort Worth, Texas
Hartwell Iron Works, Houston, Texas
Jones & Laughlin Steel Corp., Ross St., Pittsburgh, Pa.
Michelmann Steel Construction Co., Cor. of Second & Hampshire Quincy, Ill.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Penn Metal Co., 675 Concord Ave., Cambridge, Mass.
Joseph T. Ryerson & Sons, 2558 W. 16th St., Chicago, Ill.
Sculley Steel & Iron Co., Chicago, Ill.
Texas Carnegie Steel Assn., Galveston, Texas.
Union Iron Works, Selma, Ala.
Western Iron & Foundry Co., Wichita, Kansas. See page 89.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.

BEAMS, Steel

Carnegie Steel Co., Carnegie Bldg., Pittsburgh, Pa.
Chattanooga Boiler & Tank Co., Box 316, Chattanooga, Tenn.
Chicago Steel Car Co., Chicago, Ill. See page 141.
Eastern Steel Co., Pottsville, Pa.
Fort Worth Steel & Machinery Co., Fort Worth, Texas
Jones & Laughlin Steel Corp., Ross St., Pittsburgh, Pa.
Kansas City Structural Steel Co., Kansas City, Kansas.
McDougall & Potter Co., 141st & Rider Ave., New York, N. Y.
Michelmann Steel Construction Co., Cor. of Second & Hampshire Quincy, Ill.
Milwaukee Boiler Mfg. Co., 35th St. & National Ave., Milwaukee, Wis.
Mosher Steel and Machinery Co., 900 S. Austin St., Dallas, Texas
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
Joseph T. Ryerson & Sons, 2558 W. 16th St., Chicago, Ill.
Sculley Steel & Iron Co., Chicago, Ill.
Texas Carnegie Steel Assn., Galveston, Texas.
Tulsa Boiler & Machinery Co., P. O. Box 1963, Tulsa, Okla.
Union Iron Works, Selma, Ala.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Western Iron & Foundry Co., Wichita, Kansas. See page 89.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.

BEAMS, Tube Still

Bethlehem Steel Co., Bethlehem, Pa.
The Calorizing Co., Wilkinsburg, Pa.
The Ohio Steel Foundry Co., Springfield, Ohio
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.

BEARINGS

Briggs Weaver Machinery Co., Dallas, Texas
A. & F. Brown Co., 79 Barclay St., New York, N. Y.
Colburn Gear & Mfg. Co., 98 Holmes St., Norfolk Downs, Mass.
The Wm. Cramp & Sons Ship & Engine Bldg. Co., Richmond & Norris Sts., Philadelphia, Pa.
Falls Clutch & Machinery Co., Cuyahoga Falls, Ohio.
Ellsworth Haning, 114-18 Liberty St., New York, N. Y.
The Hill Clutch Machine & Foundry Co., Cleveland, Ohio
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Houston Armature Works, Houston, Texas
National Supply Co., Toledo, Ohio
Norma Co. of America, Anable Ave., Long Island City, N. Y.
Oil Well Supply Co., Pittsburgh, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Rogers Foundry & Machine, Joplin, Mo.
Union Iron Works, Selma, Ala.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Weller Mfg. Co., 1820 N. Kostnor Ave., Chicago, Ill.
Western Iron & Foundry Co., Wichita, Kansas. See page 89.
T. B. Wood's Sons Co., Chambersburg, Pa.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.

BEARINGS, Ball

T. B. Wood's Sons Co., Chambersburg, Pa.

BEARINGS, Self-Oiling

Briggs Weaver Machinery Co., Dallas, Texas
A. & F. Brown Co., 79 Barclay St., New York, N. Y.
Falls Clutch & Machinery Co., Cuyahoga Falls, Ohio.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Jeffrey Mfg. Co., 904-99 No. Fourth St., Columbus, Ohio.
McEwen Bros., Wellsville, N. Y.
National Supply Co., Toledo, Ohio
Oil Well Supply Co., Pittsburgh, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Weller Mfg. Co., 1820 N. Kostnor Ave., Chicago, Ill.
T. B. Wood's Sons Co., Chambersburg, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

BEARINGS, Self-Oiling, Adjustable

Briggs Weaver Machinery Co., Dallas, Texas
A. & F. Brown Co., 79 Barclay St., New York, N. Y.
Falls Clutch & Machinery Co., Cuyahoga Falls, Ohio.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Jeffrey Mfg. Co., 904-99 No. Fourth St., Columbus, Ohio.
Jones, W. A., Foundry & Machine Co., 4415 W. Roosevelt Road, Chicago, Illinois
Lawrence Belting Co., Inc., 113 Chambers St., New York, N. Y.
National Supply Co., Toledo, Ohio
Oil Well Supply Co., Pittsburgh, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
Weller Mfg. Co., 1820 N. Kostnor Ave., Chicago, Ill.
T. B. Wood's Sons Co., Chambersburg, Pa.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.

BELT DRESSING

Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
Briggs Weaver Machinery Co., Dallas, Texas
Chicago Belting Co., 125 N. Green, Chicago, Ill.
Cling-Surface Co., 1048 Niagara St., Buffalo, N. Y.
Continental Supply Co., St. Louis, Missouri
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Duryea Mfg. Co., Ave C and Second St., Bayonne, N. J.
The Eagle Counter & Leather Co., 414 E. Eighth St., Cincinnati, O.
Grand Rapids Belting Co., 1-3 Ionia Ave., Grand Rapids, Mich.
The Graton & Knight Mfg. Co., 356 Franklin St., Worcester, Mass. geles, Calif.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Houston Armature Works, Houston, Texas
Hudson Belting Co., 1-3 Easton Place, Worcester, Mass.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Edward R. Ladew Co., 29 Murray St., New York, N Y.
Lawrence Belting Co., Inc., 113 Chambers St., New York, N. Y.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
Marion Machine, Foundry & Supply Co., Box 685, Marion, Ind.
McCauley Belting Co., 412-430 Orleans St., Chicago, Ill.
Milwaukee Leather Belting Co., 352 E. Water St., Milwaukee, Wis.
Moloney Belting Co., 130 N. Franklin St., Chicago, Ill.
Monarch Belting Co., 1270 Ontario St., Cleveland, Ohio.
National Supply Co., Toledo, Ohio
Oil Well Supply Co., Pittsburgh, Pa.
The N. Palmer Belting Co., Bridgeport, Conn.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Petroleum Supply Co., Houston, Texas
Philadelphia Beliting Co., Sixth & Spring Garden Sts., Philadelphia, Pa.
Rahmann, Geo. & Co., 31 Spruce St., New York, N. Y.
J. E. Rhoads & Sons, 35 N. Sixth St., Philadelphia, Pa.
Chas. A. Schieren Co., 77 Ferry St. New York, N. Y.
Schwartz Belting Co., 76 Murray St., New York, N. Y.
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
Southern Engine & Pump Co., Houston, Texas
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
Texas Belting Co., Houston, Texas
Union Iron Works, Selma, Ala.
Warren Belting Co., 33 Artic St., Worcester, Mass.
I. B. Williams & Sons, 9 Orchard St., Dover, N. M.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

BELT LACING, Steel

The Bristol Co., Waterbury, Conn. See page 154.

BELT TIGHTENERS

Adkins Young & Allen Co., Chicago, Ill.
Briggs Weaver Machinery Co., Dallas, Texas
Continental Supply Co., St. Louis, Missouri
The Eagle Counter & Leather Co., 414 E. Eighth St., Cincinnati, O.
Falls Clutch & Machinery Co., Cuyahoga Falls, Ohio.
Hall & Brown Wood Working Machine Co., Broadway, Tyler & Ninth Sts., St. Louis, Mo.
The Hill Clutch Machine & Foundry Co., Cleveland, Ohio
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Lawrence Belting Co., Inc., 113 Chambers St., New York, N. Y.
Moloney Belting Co., 130 N. Franklin St., Chicago, Ill.
National Supply Co., Toledo, Ohio
Oil Well Supply Co., Pittsburgh, Pa.
The N. Palmer Belting Co., Bridgeport, Conn.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Philadelphia Beliting Co., Sixth & Spring Garden Sts., Philadelphia, Pa.
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
Texas Belting Co., Houston, Texas.
Union Iron Works, Selma, Ala.
Western Machinery Co., Los Angeles, Calif.
T. B. Wood's Sons Co., Chambersburg, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

BELTING

Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.

Briggs Weaver Machinery Co., Dallas, Texas
Chicago Belting Co., 125 N. Green, Chicago, Ill.
Chicago Rawhide Mfg. Co., 1273 Elston Ave., Chicago, Ill.
Continental Supply Co., St. Louis, Missouri
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Diamond Rubber Co., Inc., Akron, Ohio.
Duryea Mfg. Co., Ave C and Second St., Bayonne, N. J.
The Eagle Counter & Leather Co., 414 E. Eighth St., Cincinnati, O.
The B. F. Goodrich Rubber Co., Akron, Ohio
Hall & Brown Wood Working Machine Co., Broadway, Tyler & Ninth Sts., St. Louis, Mo.
Hercules Supply Co., Corsicana, Texas
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
E. F. Houghton & Co., Philadelphia, Pa.
Hudson Belting Co., 1-3 Easton Place, Worcester, Mass.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Johnson Belting Co., 423-35 E. 56th St., New York, N. Y.
Edward R. Ladew Co., 29 Murray St., New York, N Y.
Lawrence Belting Co., Inc., 113 Chambers St., New York, N. Y.
The Manhattan Rubber Mfg. Co., Passaic, N. J.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
McCauley Belting Co., 412-430 Orleans St., Chicago, Ill.
Milwaukee Leather Belting Co., 352 E. Water St., Milwaukee, Wis.
Missouri Belting Co., 1021-1028 S. Grand Ave., St. Louis, Mo.
Moloney Belting Co., 130 N. Franklin St., Chicago, Ill.
National Supply Co., Toledo, Ohio
New York Belting & Packing Co., 91-93 Chamber St., New York, N. Y.
Oil Well Supply Co., Pittsburgh, Pa.
The N. Palmer Belting Co., Bridgeport, Conn.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Petroleum Supply Co., Houston, Texas
Philadelphia Beliting Co., Sixth & Spring Garden Sts., Philadelphia, Pa.
Pioneer Rubber Mills, 353 Sacramento St., San Francisco, Calif.
Rahmann, Geo. & Co., 31 Spruce St., New York, N. Y.
Republic Rubber Co., Youngstown, Ohio
J. E. Rhoads & Sons, 35 N. Sixth St., Philadelphia, Pa.
Chas. A. Schieren Co., 77 Ferry St. New York, N. Y.
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
Texas Belting Co., Houston, Texas.
Union Iron Works, Selma, Ala.
I. B. Williams & Sons, 9 Orchard St., Dover, N. M.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

BELTING, Balata

Continental Supply Co., St. Louis, Missouri
R. & J. Dick Co., Inc., Passaic, N. J.
The Eagle Counter & Leather Co., 414 E. Eighth St., Cincinnati, O.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Lawrence Belting Co., Inc., 113 Chambers St., New York, N. Y.
Oil Well Supply Co., Pittsburgh, Pa.
Petroleum Supply Co., Houston, Texas
Republic Rubber Co., Youngstown, Ohio
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.

BELTING, Camel Hair

Continental Supply Co., St. Louis, Missouri
Lawrence Belting Co., Inc., 113 Chambers St., New York, N. Y.
Oil Well Supply Co., Pittsburgh, Pa.
Petroleum Supply Co., Houston, Texas
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
J. S. Turner Mfg. Co., 133 Middle St., P. O. Box 1072, Lowell, Mass.

BELTING, Canvas

Briggs Weaver Machinery Co., Dallas, Texas
Continental Supply Co., St. Louis, Missouri
The Eagle Counter & Leather Co., 414 E. Eighth St., Cincinnati, O.
Gandy Belting Co., 726-740 W. Pratt St., Baltimore, Md.
Hall & Brown Wood Working Machine Co., Broadway, Tyler & Ninth Sts., St. Louis, Mo.
Horton Machine Works, 4th & Magee Sts., Elmira, N. Y.
Hudson Belting Co., 1-3 Easton Place, Worcester, Mass.
Lawrence Belting Co., Inc., 113 Chambers St., New York, N. Y.
Missouri Belting Co., 1021-1028 S. Grand Ave., St. Louis, Mo.
Oil Well Supply Co., Pittsburgh, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
Texas Belting Co., Houston, Texas.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

BELTING, Conveyor

Briggs Weaver Machinery Co., Dallas, Texas
Continental Supply Co., St. Louis, Missouri
Diamond Rubber Co., Inc., Akron, Ohio.
R. & J. Dick Co., Inc., Passaic, N. J.
Duryea Mfg. Co., Ave C and Second St., Bayonne, N. J.
Gandy Belting Co., 726-740 W. Pratt St., Baltimore, Md.
B. F. Goodrich Rubber Co., Akron, Ohio
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Hudson Belting Co., 1-3 Easton Place, Worcester, Mass.
Jeffrey Mfg. Co., 904-99 No. Fourth St., Columbus, Ohio.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Edward R. Ladew Co., 29 Murray St., New York, N Y.
Lawrence Belting Co., Inc., 113 Chambers St., New York, N. Y.
The Manhattan Rubber Mfg. Co., Passaic, N. J.
National Supply Co., Toledo, Ohio
New York Belting & Packing Co., 91-93 Chamber St., New York, N. Y.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Pioneer Rubber Mills, 353 Sacramento St., San Francisco, Calif.
Republic Rubber Co., Youngstown, Ohio
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
Texas Belting Co., Houston, Texas.
Union Iron Works, Selma, Ala.
Weller Mfg. Co., 1820 N. Kostnor Ave., Chicago, Ill.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

BELTING, Cotton

Briggs Weaver Machinery Co., Dallas, Texas
Continental Supply Co., St. Louis, Missouri
Duryea Mfg. Co., Ave C and Second St., Bayonne, N. J.
The Eagle Counter & Leather Co., 414 E. Eighth St., Cincinnati, O.
Gandy Belting Co., 726-740 W. Pratt St., Baltimore, Md.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Hudson Belting Co., 1-3 Easton Place, Worcester, Mass.
Lawrence Belting Co., Inc., 113 Chambers St., New York, N. Y.
National Supply Co., Toledo, Ohio
Peden Iron & Steel Co., Houston, Texas. See page 85.
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
Texas Belting Co., Houston, Texas.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

BELTING, Elevator

Briggs Weaver Machinery Co., Dallas, Texas
Continental Supply Co., St. Louis, Missouri
Diamond Rubber Co., Inc., Akron, Ohio.
Duryea Mfg. Co., Ave C and Second St., Bayonne, N. J.
The Eagle Counter & Leather Co., 414 E. Eighth St., Cincinnati, O.
Gandy Belting Co., 726-740 W. Pratt St., Baltimore, Md.
B. F. Goodrich Rubber Co., Akron, Ohio
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Edward R. Ladew Co., 29 Murray St., New York, N Y.
Lawrence Belting Co., Inc., 113 Chambers St., New York, N. Y.
The Manhattan Rubber Mfg. Co., Passaic, N. J.
National Supply Co., Toledo, Ohio
New York Belting & Packing Co., 91-93 Chamber St., New York, N. Y.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Pioneer Rubber Mills, 353 Sacramento St., San Francisco, Calif.
Republic Rubber Co., Youngstown, Ohio
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
Texas Belting Co., Houston, Texas.
J. S. Turner Mfg. Co., 133 Middle St., P. O. Bx 1072, Lowell, Mass.
Weller Mfg. Co., 1820 N. Kostnor Ave., Chicago, Ill.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

BELTING, Leather

Briggs Weaver Machinery Co., Dallas, Texas
Chicago Belting Co., 125 N. Green, Chicago, Ill.
Chicago Rawhide Mfg. Co., 1273 Elston Ave., Chicago, Ill.
Continental Supply Co., St. Louis, Missouri
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Equitable Equipment Co., Inc., New Orleans, La.
Grand Rapids Belting Co., 1-3 Ionia Ave., Grand Rapids, Mich.
The Graton & Knight Mfg. Co., 356 Franklin St., Worcester, Mass.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
E. F. Houghton & Co., Philadelphia, Pa.
Hudson Belting Co., 1-3 Easton Place, Worcester, Mass.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Johnson Belting Co., 423-35 E. 56th St., New York, N. Y.
Edward R. Ladew Co., 29 Murray St., New York, N Y.
Lawrence Belting Co., Inc., 113 Chambers St., New York, N. Y.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
McCauley Belting Co., 412-430 Orleans St., Chicago, Ill.
Milwaukee Leather Belting Co., 352 E. Water St., Milwaukee, Wis.
Missouri Belting Co., 1021-1028 S. Grand Ave., St. Louis, Mo.
Moloney Belting Co., 130 N. Franklin St., Chicago, Ill.
National Supply Co., Toledo, Ohio
The N. Palmer Belting Co., Bridgeport, Conn.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Rahmann, Geo. & Co., 31 Spruce St., New York, N. Y.
J. E. Rhoads & Sons, 35 N. Sixth St., Philadelphia, Pa.
Chas. A. Schieren Co., 77 Ferry St. New York, N. Y.
Schwartz Belting Co., 76 Murray St., New York, N. Y.
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
Texas Belting Co., Houston, Texas.
J. S. Turner Mfg. Co., 133 Middle St., P. O. Box 1072, Lowell, Mass.
Union Belt Co., 66 Troy St., Fall River, Mass.
Union Iron Works, Selma, Ala.
Warren Belting Co., 33 Artic St., Worcester, Mass.
Western Rawhide & Belting Co., 901-35 Winnebago St., Milwaukee, Wis.
I. B. Williams & Sons, 9 Orchard St., Dover, N. H.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

BELTING, Rubber

Briggs Weaver Machinery Co., Dallas, Texas
Continental Supply Co., St. Louis, Missouri
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Diamond Rubber Co., Inc., Akron, Ohio.
The Eagle Counter & Leather Co., 414 E. Eighth St., Cincinnati, O.
Equitable Equipment Co., Inc., New Orleans, La.
Hall & Brown Wood Working Machine Co., Broadway, Tyler & Ninth Sts., St. Louis, Mo.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Hudson Belting Co., 1-3 Easton Place, Worcester, Mass.
Janos Asbestos Co., 26 Cortlandt St., New York, N. Y.
Jeffrey Mfg. Co., 904-99 No. Fourth St., Columbus, Ohio.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Geo. W. Knowlton Rubber Co., 60 Pearl St., Boston, Mass.
Lawrence Belting Co., Inc., 113 Chambers St., New York, N. Y.
The Manhattan Rubber Mfg. Co., Passaic, N. J.
Monarch Belting Co., 1270 Ontario St., Cleveland, O.
National Supply Co., Toledo, Ohio
New York Belting & Packing Co., 91-93 Chamber St., New York, N. Y.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Petroleum Supply Co., Houston, Texas
Pioneer Rubber Mills, 353 Sacramento St., San Francisco, Calif.
Republic Rubber Co., Youngstown, Ohio
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
Texas Belting Co., Houston, Texas.
J. S. Turner Mfg. Co., 133 Middle St., P. O. Box 1072, Lowell, Mass.
Union Iron Works, Selma, Ala.
Voorhees Rubber Mfg. Co., 20 Bostwick Ave., Jersey City, N.J.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.

BELTING, Silent Chain

Briggs Weaver Machinery Co., Dallas, Texas
Continental Supply Co., St. Louis, Missouri
The Darcoid Co., 55 Warren St., New York, N. Y.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Morse Chain Co., Ithaca, N. Y.
National Supply Co., Toledo, Ohio
Peden Iron & Steel Co., Houston, Texas. See page 85.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.

BELTING, Transmission

Briggs Weaver Machinery Co., Dallas, Texas
Chicago Belting Co., 125 N. Green, Chicago, Ill.
Diamond Rubber Co., Inc., Akron, Ohio.
R. & J. Dick Co., Inc., Passaic, N. J.
Duryea Mfg. Co., Ave C and Second St., Bayonne, N. J.
The Eagle Counter & Leather Co., 414 E. Eighth St., Cincinnati, O.
Gandy Belting Co., 726-740 W. Pratt St., Baltimore, Md.
B. F. Goodrich Rubber Co., Akron, Ohio
Hall & Brown Wood Working Machine Co., Broadway, Tyler & Ninth Sts., St. Louis, Mo.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Hudson Belting Co., 1-3 Easton Place, Worcester, Mass.
Jeffrey Mfg. Co., 904-99 No. Fourth St., Columbus, Ohio.
Johnson Belting Co., 423-35 E. 56th St., New York, N. Y.
Edward R. Ladew Co., 29 Murray St., New York, N Y.
Lawrence Belting Co., Inc., 113 Chambers St., New York, N. Y.
The Manhattan Rubber Mfg. Co., Passaic, N. J.
McCauley Belting Co., 412-430 Orleans St., Chicago, Ill.
Missouri Belting Co., 1021-1028 S. Grand Ave., St. Louis, Mo.
Moloney Belting Co., 130 N. Franklin St., Chicago, Ill.
Monarch Belting Co., 1270 Ontario St., Cleveland, Ohio.
Morse Chain Co., Ithaca, N. Y.
National Supply Co., Toledo, Ohio
New York Belting & Packing Co., 91-93 Chamber St., New York, N. Y.

Peden Iron & Steel Co., Houston, Texas. See page 85.
Rahmann, Geo. & Co., 31 Spruce St., New York, N. Y.
Republic Rubber Co., Youngstown, Ohio
J. E. Rhoads & Sons, 35 N. Sixth St., Philadelphia, Pa.
Chas. A. Schieren Co., 77 Ferry St. New York, N. Y.
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
Texas Belting Co., Houston, Texas.
J. S. Turner Mfg. Co., 133 Middle St., P. O. Box 1072, Lowell, Mass.
I. B. Williams & Sons, 9 Orchard St., Dover, N. H.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

BELTING. Waterproof

Briggs Weaver Machinery Co., Dallas, Texas
Chicago Belting Co., 125 N. Green, Chicago, Ill.
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Diamond Rubber Co., Inc., Akron, Ohio.
Duryea Mfg. Co., Ave C and Second St., Bayonne, N. J.
The Eagle Counter & Leather Co., 414 E. Eighth St., Cincinnati, O.
Gandy Belting Co., 726-740 W. Pratt St., Baltimore, Md.
Grand Rapids Belting Co., 1-3 Ionia Ave., Grand Rapids, Mich.
Hall & Brown Wood Working Machine Co., Broadway, Tyler & Ninth Sts., St. Louis, Mo.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Hudson Belting Co., 1-3 Easton Place, Worcester, Mass.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Johnson Belting Co., 423-35 E. 56th St., New York, N. Y.
Edward R. Ladew Co., 29 Murray St., New York, N Y.
Lawrence Belting Co., Inc., 113 Chambers St., New York, N. Y.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
McCauley Belting Co., 412-430 Orleans St., Chicago, Ill.
Milwaukee Leather Belting Co., 352 E. Water St., Milwaukee, Wis.
Missouri Belting Co., 1021-1028 S. Grand Ave., St. Louis, Mo.
Moloney Belting Co., 130 N. Franklin St., Chicago, Ill.
Monarch Belting Co., 1270 Ontario St., Cleveland, Ohio.
National Supply Co., Toledo, Ohio
New York Belting & Packing Co., 91-93 Chamber St., New York, N. Y.
The N. Palmer Belting Co., Bridgeport, Conn.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Pioneer Rubber Mills, 353 Sacramento St., San Francisco, Calif.
Rahmann, Geo. & Co., 31 Spruce St., New York, N. Y.
Republic Rubber Co., Youngstown, Ohio
J. E. Rhoads & Sons, 35 N. Sixth St., Philadelphia, Pa.
Chas. A. Schieren Co., 77 Ferry St. New York, N. Y.
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
Texas Belting Co., Houston, Texas.
J. S. Turner Mfg. Co., 133 Middle St., P. O. Box 1072, Lowell, Mass.
Union Belt Co., 66 Troy St., Fall River, Mass.
Warren Belting Co., 33 Artic St., Worcester, Mass.
Western Rawhide & Belting Co., 901-35 Winnebago St., Milwaukee, Wis.
I. B. Williams & Sons, 9 Orchard St., Dover, N. H.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

BENCHES, Workshop (Steel)

Lyon Metallic Mfg. Co., Aurora, Ill.

BENDS, PIPE

American Tube & Pipe Bending Co., Niles, Ohio
Baker Ice Machine Co., 3601 Evans St., Omaha, Nebr.
Bridgeport Brass Co., Bridgeport, Conn.
Briggs Weaver Machinery Co., Dallas, Texas
Carbondale Machine Co., Carbondale, Pa.
Chattanooga Boiler & Tank Co., Box 316, Chattanooga, Tenn.
Continental Supply Co., St. Louis, Missouri
Harrisburg Pipe & Pipe Bending Co,. Houston, Texas
Heine Boiler Co., St. Louis, Mo.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Kelly and Jones Co., Greensburg, Pa.
Midwest Piping & Supply Co., Second & Miller Sts., St. Louis, Mo
W. K. Mitchell & Co., Inc., Ellsworth St. & Schuylkill River. Philadelphia, Pa.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Pipe Bending Co., New Haven, Conn.
National Supply Co., Toledo, Ohio
National Valve & Mfg. Co., 31st and Liberty, Pittsburgh, Pa.
Joseph Oat & Sons, 232 Quarry St., Philadelphia, Pa.
Oil Well Supply Co., Pittsburgh, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Philadelphia Steel & Iron Co., 1008 Commercial Trust Bldg., Philadelphia, Pa.
Pittsburgh Pipe Coil & Bending Co., 61 Bridge St., Etna, Pa.
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
Roessing Mfg. Company, Sharpsburg Station, Pittsburgh, Pa.
Shaw-Kendall Engineering Company, 120-130 S. Superior St., Toledo, Ohio
John Simmons Co., 104-10 Center St., New York, N. Y.
Standard Piping & Fittings Co., 13th and Race Sts., Philadelphia, Pa.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Vulcan Steam Forging Co., 247 Rano St., Buffalo, N. Y.
Walworth Company, 88 Pearl St., Boston, Mass.
Whitlock Coil Pipe Co., Hartford, Conn.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

BENDS, Lead Lined Pipe

United Lead Co., 11 Broadway, New York, N. Y.

BINS

Berger Mfg. Co., Canton, Ohio
Erie City Iron Works, Erie, Pa.
Finucane Boiler Works, Houston, Texas.
Hardinge Co., Inc., York, Pa.
L. O. Koven & Brother, Inc., 154 Ogden Ave., Jersey City, N.J.
United Alloy Steel Corp., Canton, Ohio.

BINS, Ash

Erie City Iron Works, Erie, Pa.
L. O. Koven & Brother, Inc., 154 Ogden Ave., Jersey City, N.J.
Union Engineering Co., Cleveland, Ohio.

BINS, Steel

Lyon Metallic Mfg. Co., Aurora, Ill.

BLOCKS, Asbestos

Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
Anchor Packing Co., Lafayette Bldg., Philadelphia, Pa.
Armstrong Cork & Insulation Co., Pittsburgh, Pa.
R. V. Aycock Co., Kansas City, Mo.
The Darcoid Co., 55 Warren St., New York, N. Y.
Ehrot Magnesia Mfg. Co., Valley Forge, Pa.
Keasbey & Mattison Co., Ambler, Pa.
National Supply Co., Toledo, Ohio
Philip Carey Co., Cincinnati, Ohio
Rogers Asbestos Co., Houston, Texas.
Standard Asbestos Mfg. Co., 820-22 West Lake St., Chicago, Ill.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

BLOCKS, Chain Hoist

Brazelton, Wessendorff & Nelms, Houston, Texas
Briggs Weaver Machinery Co., Dallas, Texas
Continental Supply Co., St. Louis, Missouri
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
F. W. Gartner Co., Houston, Texas.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
National Supply Co., Toledo, Ohio
Oil Well Supply Co., Pittsburgh, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Petroleum Supply Co., Houston, Texas
Joseph T. Ryerson & Sons, 2558 W. 16th St., Chicago, Ill.
Sculley Steel & Iron Co., Chicago, Ill.
Union Iron Works, Selma, Ala.
Walworth Company, 88 Pearl St., Boston, Mass.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

BLOCKS, Insulating

Armstrong Cork & Insulation Co., Pittsburgh, Pa.
R. V. Aycock Co., Kansas City, Mo.
Banner Rock Products Co., Alexandria, Ind.
Celite Products Co., 1320 South Hope St., Los Angeles, Calif. See Front Cover.
Ehrot Magnesia Mfg. Co., Valley Forge, Pa.
Insulating Products Co., 1601 Fulford St., Kalamazoo, Michigan.
Keasbey & Mattison Co., Ambler, Pa.
Nitingale & Childs Co., 195 Albany St., Cambridge Sta., Boston, Mass.
Philip Carey Co., Cincinnati, Ohio
Rogers Asbestos Co., Houston, Texas.
Union Fibre Co., Winona, Minn.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.

BLOCKS, Pillow

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Barnhart-Davis Co., Warren, Pa.
The Brady Conveyors Corp., 20 W. Jackson Blvd., Chicago, Ill.
Briggs Weaver Machinery Co., Dallas, Texas
A. & F. Brown Co., 79 Barclay St., New York, N. Y.
Colburn Gear & Mfg. Co., 98 Holmes St., Norfolk Downs, Mass.
Continental Supply Co., St. Louis, Missouri
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Falls Clutch & Machinery Co., Cuyahoga Falls, Ohio.
F. W. Gartner Co., Houston, Texas.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Jones, W. A., Foundry & Machine Co., 4415 W. Roosevelt Road, Chicago, Illinois
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York. N.Y.
Mesta Machine Co., Pittsburgh, Pa.
Moloch Co., Kaukauna, Wis.
National Supply Co., Toledo, Ohio
Peden Iron & Steel Co., Houston, Texas. See page 85.
Rogers Foundry & Machine, Joplin, Mo.
Southern Engine & Pump Co., Houston, Texas
Union Iron Works, Selma. Ala.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
T. B. Wood's Sons Co., Chambersburg, Pa.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.

BLOWCASES, Automatic

Kansas City Structural Steel Co., Kansas City, Kansas.

BLOWERS

Allen & Billmyre Co., Inc., Grand Central Palace, New York City, N. Y.
The American Blower Co., 6004 Russell, Detroit, Mich.
American Gas Construction Co., Newton, Iowa
Bayley Mfg. Co., 73 Greenbush St., Milwaukee, Wis.
Beach-Russ Co., 30 Church St., New York, N. Y.
W. N. Best Furnace & Burner Corp., 11 Broadway, New York, New York.
Brazelton, Wessendorff & Nelms, Houston, Texas
Briggs Weaver Machinery Co., Dallas, Texas
Canedy-Otto Mfg. Co., Chicago Heights, Ill.
Carling Turbine Blower Co., Inc., 104 Harding St., Worcester, Mass.
Champion Blower & Forge Co., Lancaster, Pa.
Connersville Blower Co., Connersville, Ind.
De Laval Steam Turbine Co., Trenton, N. J. See page 123.
Eclipse Fuel Engineering Co., Rockford, Ill.
Electric Blower Co., 352 Atlantic Ave., Boston, Mass.
Furness Bros. Co., 1615 W. Walnut St., Chicago, Ill.
Heine Boiler Co., St. Louis, Mo.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Jeffrey Mfg. Co., 904-99 No. Fourth St., Columbus, Ohio.
Lamert & Mann Co., Wood & Waknut Sts., Chicago, Ill.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
National Supply Co., Toledo, Ohio
North American Mfg. Co., 8918 Frederick Ave., Cleveland, Ohio.
Nute, McGehee, Geary Co., Chambersburg, Pa.
Oil Well Supply Co., Pittsburgh, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Robinson Ventilating Co., 517 House Bldg., Pittsburgh, Pa.
The P. H. & F. M. Roots Co., Connersville, Ind. See inside front cover.
Sculley Steel & Iron Co., Chicago, Ill.
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
Southern Engine & Pump Co., Houston, Texas
Spencer Turbine Company, Hartford, Conn.
Western Gas Construction Co., Fort Wayne, Ind.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

BLOWERS, Cast Iron

The American Blower Co., 6004 Russell, Detroit, Mich.
American Gas Furnace Co., Lafayette, Spring and Elizabeth St., Elizabeth, N. J.
Bayley Mfg. Co., 73 Greenbush St., Milwaukee, Wis.
Beach-Russ Co., 30 Church St., New York, N. Y.
W. N. Best Furnace & Burner Corp., 11 Broadway, New York, New York.
Brazelton, Wessendorff & Nelms, Houston, Texas
Briggs Weaver Machinery Co., Dallas, Texas
Canedy-Otto Mfg. Co., Chicago Heights, Ill.
Champion Blower & Forge Co., Lancaster, Pa.
Connersville Blower Co., Connersville, Ind.
De Laval Steam Turbine Co., Trenton, N. J. See page 123.
Electric Blower Co., 352 Atlantic Ave., Boston, Mass.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Lamert & Mann Co., Wood & Waknut Sts., Chicago, Ill.
McEwen Bros., Wellsville, N. Y.
North American Mfg. Co., 8918 Frederick Ave., Cleveland, Ohio.
Peden Iron & Steel Co., Houston, Texas. See page 85.
The P. H. & F. M. Roots Co., Connersville, Ind. See inside front cover.

BLOWERS, Electric

Allen & Billmyre Co., Inc., Grand Central Palace, New York City, N. Y.
The American Blower Co., 6004 Russell, Detroit, Mich.
American Gas Construction Co., Newton, Iowa
American Gas Furnace Co., Lafayette, Spring and Elizabeth St., Elizabeth, N. J.
Beach-Russ Co., 30 Church St., New York, N. Y.
Brazelton, Wessendorff & Nelms, Houston, Texas
Briggs Weaver Machinery Co., Dallas, Texas
Canedy-Otto Mfg. Co., Chicago 104 Harding St., Worcester, Mass. Heights, Ill.
Carling Turbine Blower Co., Inc.,

Champion Blower & Forge Co., Lancaster, Pa.
N. C. Davison Gas Burner & Welding Co., 2939 Smallman St., Pittsburgh, Pa.
De Laval Steam Turbine Co., Trenton, N. J. See page 123.
Eclipse Fuel Engineering Co., Rockford, Ill.
Electric Blower Co., 352 Atlantic Ave., Boston, Mass.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Lamert & Mann Co., Wood & Waknut Sts., Chicago, Ill.
Langstadt-Meyer Co., Appleton, Wis.
Maintenance Co., Inc., 449-53 W. Forty-Second St., N. Y., N. Y.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
May Machinery Co., Second National Bank Bldg., Houston, Tex.
National Supply Co., Toledo, Ohio
North American Mfg. Co., 8918 Frederick Ave., Cleveland, Ohio.
Power Turbo Blower Co., 350 Madison Ave., New York, N. Y.
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
Robinson Ventilating Co., 517 House Bldg., Pittsburgh, Pa.
The P. H. & F. M. Roots Co., Connersville, Ind. See inside front cover.
Spencer Turbine Company, Hartford, Conn.
Western Gas Construction Co., Fort Wayne, Ind.

BLOWERS, Electric Forge

Electric Blower Co., 352 Atlantic Ave., Boston, Mass.

BLOWERS, Exhaust

Allen & Billmyre Co., Inc., Grand Central Palace, New York City, N. Y.
The American Blower Co., 6004 Russell, Detroit, Mich.
American Gas Furnace Co., Lafayette, Spring and Elizabeth St., Elizabeth, N. J.
Bayley Mfg. Co., 73 Greenbush St., Milwaukee, Wis.
Brazelton, Wessendorff & Nelms, Houston, Texas
Briggs Weaver Machinery Co., Dallas, Texas
Canedy-Otto Mfg. Co., Chicago Heights, Ill.
Carling Turbine Blower Co., Inc., 104 Harding St., Worcester, Mass.
Champion Blower & Forge Co., Lancaster, Pa.
De Laval Steam Turbine Co., Trenton, N. J. See page 123.
Electric Blower Co., 352 Atlantic Ave., Boston, Mass.
Hall & Brown Wood Working Machine Co., Broadway, Tyler & Ninth Sts., St. Louis, Mo.
Heine Boiler Co., St. Louis, Mo.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Jeffrey Mfg. Co., 904-99 No. Fourth St., Columbus, Ohio.
Lamert & Mann Co., Wood & Waknut Sts., Chicago, Ill.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
National Supply Co., Toledo, Ohio
Nute, McGehee, Geary Co., Chambersburg, Pa.
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
Robinson Ventilating Co., 517 House Bldg., Pittsburgh, Pa.
The P. H. & F. M. Roots Co., Connersville, Ind. See inside front cover.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

BLOWERS, Flue Gas, Re-circulating

Coppus Engineering Corp., 342-348 Park Ave., Worcester, Mass.

BLOWERS, Forge

Electric Blower Co., 352 Atlantic Ave., Boston, Mass.

BLOWERS, Multi-Stage

Allen & Billmyre Co., Inc., Grand Central Palace, New York City, N. Y.
Briggs Weaver Machinery Co., Dallas, Texas
De Laval Steam Turbine Co., Trenton, N. J. See page 123.
Lamert & Mann Co., Wood & Waknut Sts., Chicago, Ill.
National Supply Co., Toledo, Ohio
Spencer Turbine Company, Hartford, Conn.
Syracuse Industrial Gas Co., 208 S. Geddes St., Syracuse, N. Y.

BLOWERS, Oil Burner

Allen & Billmyre Co., Inc., Grand Central Palace, New York City, N. Y.
The American Blower Co., 6004 Russell, Detroit, Mich.
Bayley Mfg. Co., 73 Greenbush St., Milwaukee, Wis.
Beach-Russ Co., 30 Church St., New York, N. Y.
W. N. Best Furnace & Burner Corp., 11 Broadway, New York, New York.
Briggs Weaver Machinery Co., Dallas, Texas
Canedy-Otto Mfg. Co., Chicago Heights, Ill.
Carling Turbine Blower Co., Inc., 104 Harding St., Worcester, Mass.
Champion Blower & Forge Co., Lancaster, Pa.
Connersville Blower Co., Connersville, Ind.
Cross Engineering Co., 700 Baltimore Ave., Kansas City, Mo. See page 129.
Crowell Mfg. Co., 315 Franklin Ave., Brooklyn, N. Y.
N. C. Davison Gas Burner & Welding Co., 2939 Smallman St., Pittsburgh, Pa.
Eclipse Fuel Engineering Co., Rockford, Ill.
Electric Blower Co., 352 Atlantic Ave., Boston, Mass.
Griebel Instrument Co., Carbondale, Pa.
Lamert & Mann Co., Wood & Waknut Sts., Chicago, Ill.
MacLeod Company, Cincinnati, Ohio
Maxon Premix Burner Co., Muncie, Ind.
National Supply Co., Toledo, Ohio
North American Mfg. Co., 8918 Frederick Ave., Cleveland, Ohio.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Robinson Ventilating Co., 517 House Bldg., Pittsburgh, Pa.
The P. H. & F. M. Roots Co., Connersville, Ind. See inside front cover.
Spencer Turbine Company, Hartford, Conn.

BLOWERS, Portable

Electric Blower Co., 352 Atlantic Ave., Boston, Mass.

BLOWERS, Portable Electric

Electric Blower Co., 352 Atlantic Ave., Boston, Mass.

BLOWERS, Pressure

Allen & Billmyre Co., Inc., Grand Central Palace, New York City, N. Y.
The American Blower Co., 6004 Russell, Detroit, Mich.
American Gas Construction Co., Newton, Iowa
American Gas Furnace Co., Lafayette, Spring and Elizabeth St., Elizabeth, N. J.
Bayley Mfg. Co., 73 Greenbush St., Milwaukee, Wis.
Beach-Russ Co., 30 Church St., New York, N. Y.
Briggs Weaver Machinery Co., Dallas, Texas
Canedy-Otto Mfg. Co., Chicago Heights, Ill.
Carling Turbine Blower Co., Inc., 104 Harding St., Worcester, Mass.
Champion Blower & Forge Co., Lancaster, Pa.
Crowell Mfg. Co., 315 Franklin Ave., Brooklyn, N. Y.
De Laval Steam Turbine Co., Trenton, N. J. See page 123.
Eclipse Fuel Engineering Co., Rockford, Ill.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Improved Aluminum Gaso Protector Co., 7216 Ridge Blvd., Chicago, Ill.
Jeffrey Mfg. Co., 904-99 No. Fourth St., Columbus, Ohio.
Kruger & Blind Co., 513 Master St., Philadelphia, Pa.
Lamert & Mann Co., Wood & Waknut Sts., Chicago, Ill.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
National Supply Co., Toledo, Ohio
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
Robinson Ventilating Co., 517 House Bldg., Pittsburgh, Pa.
The P. H. & F. M. Roots Co., Connersville, Ind. See inside front cover.
Southern Engine & Pump Co., Houston, Texas
Spencer Turbine Company, Hartford, Conn.
Weimar Engineering Works, Westmoreland & Jasper Sts., Philadelphia, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

BLOWERS, Positive Pressure

Kruger & Blind Co., 513 Master St., Philadelphia, Pa.

BLOWERS, Rotary Pressure

Allen & Billmyre Co., Inc., Grand Central Palace, New York City, N. Y.
American Gas Furnace Co., Lafayette, Spring and Elizabeth St., Elizabeth, N. J.
Beach-Russ Co., 30 Church St., New York, N. Y.
W. N. Best Furnace & Burner Corp., 11 Broadway, New York, New York.
Brazelton, Wessendorff & Nelms, Houston, Texas
Briggs Weaver Machinery Co., Dallas, Texas
Champion Blower & Forge Co., Lancaster, Pa.
Connersville Blower Co., Connersville, Ind.
Crowell Mfg. Co., 315 Franklin Ave., Brooklyn, N. Y.
Eclipse Fuel Engineering Co., Rockford, Ill.
Foster Pump Wks., Inc., 36 Bridge St., Brooklyn, N. Y.
Jeffrey Mfg. Co., 904-99 No. Fourth St., Columbus, Ohio.
Kruger & Blind Co., 513 Master St., Philadelphia, Pa.
Lamert & Mann Co., Wood & Waknut Sts., Chicago, Ill.
National Supply Co., Toledo, Ohio
Robinson Ventilating Co., 517 House Bldg., Pittsburgh, Pa.
The P. H. & F. M. Roots Co., Connersville, Ind. See inside front cover.
Southern Engine & Pump Co., Houston, Texas
Weimar Engineering Works, Westmoreland & Jasper Sts., Philadelphia, Pa.

BLOWERS, Soot

Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
Allen & Billmyre Co., Inc., Grand Central Palace, New York City, N. Y.
Briggs Weaver Machinery Co., Dallas, Texas
Cleveland Flue Cleaner Mfg. Co., 5318 St. Clair Ave., Cleveland, O.
Cross Engineering Co., 700 Baltimore Ave., Kansas City, Mo. See page 129.
General Specialty Co., 61-69 Carroll St., Buffalo, N. Y.
P. H. Gill & Sons Forge & Machine Works, 2 Lorraine St., Brooklyn, N. Y.
Heine Boiler Co., St. Louis, Mo.
Paul B. Huyette Co., Inc., 5 South Eighteenth St., Philadelphia, Pa.
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.
Marion Machine, Foundry & Supply Co., Box 685, Marion, Ind.
Monarch Soot Remover Co., Inc., 261 Franklin St., Boston, Mass.
Nute, McGehee, Geary Co., Chambersburg, Pa.
Quinn & Co., 1347 Harrison Ave., Cincinnati, Ohio
Roberts Steam Specialty Co., 5318 St. Clair Ave., Cleveland, Ohio
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
Vulcan Soot Cleaner Co., Webster Bldg., DuBois, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

BLOWERS, Steam Jet

The Brady Conveyors Corp., 20 W. Jackson Blvd., Chicago, Ill.
Champion Blower & Forge Co., Lancaster, Pa.
Nute, McGehee, Geary Co., Chambersburg, Pa.
Oil Well Supply Co., Pittsburgh, Pa.
Schutte & Koerting Co., 1165 Thompson St., Philadelphia, Pa. See page 149.
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

BLOWERS, Turbine

Allen & Billmyre Co., Inc., Grand Central Palace, New York City, N. Y.
American Gas Construction Co., Newton, Iowa
W. N. Best Furnace & Burner Corp., 11 Broadway, New York, New York.
Briggs Weaver Machinery Co., Dallas, Texas
Carling Turbine Blower Co., Inc., 104 Harding St., Worcester, Mass.
Cross Engineering Co., 700 Baltimore Ave., Kansas City, Mo. See page 129.
De Laval Steam Turbine Co., Trenton, N. J. See page 123.
McEwen Brothers, Wellsville, N.Y.
Nute, McGehee, Geary Co., Chambersburg, Pa.
H. A. Paine Co., 419-20 Cotton Exchange Bldg., Houston, Texas.
Power Turbo Blower Co., 350 Madison Ave., New York, N. Y.
Ridgway, Dynamo & Engine Co., Ridgway, Pa.
Robinson Ventilating Co., 517 House Bldg., Pittsburgh, Pa.
Spencer Turbine Company, Hartford, Conn.
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
Western Gas Construction Co., Fort Wayne, Ind.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

BLOWERS, Ventilating

The American Blower Co., 6004 Russell, Detroit, Mich.
Briggs Weaver Machinery Co., Dallas, Texas
Carling Turbine Blower Co., Inc., 104 Harding St., Worcester, Mass.
Champion Blower & Forge Co., Lancaster, Pa.
Electric Blower Co., 352 Atlantic Ave., Boston, Mass.
Heine Boiler Co., St. Louis, Mo.
Jeffrey Mfg. Co., 904-99 No. Fourth St., Columbus, Ohio.
Langstadt-Meyer Co., Appleton, Wis.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
National Supply Co., Toledo, Ohio
Peden Iron & Steel Co., Houston, Texas. See page 85.
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
Robinson Ventilating Co., 517 House Bldg., Pittsburgh, Pa.
The P. H. & F. M. Roots Co., Connersville, Ind. See inside front cover.
E. Van Noorden Co., 100 Magazine St. Roxbury, Mass.

BLOWPIPES—Welding and Cutting

Oxweld Acetylene Co., Long Island City, L. I., N. Y.

BLUE PRINTING MACHINES

Abbott-McKay Corp., 21 Pearl St., Boston, Mass.
Eugene Dietzgen Co., 162-166 W. Monroe St., Chicago, Ill.
Kolesch & Co., 138 Fulton St., New York, N. Y.
New York Blue Print Paper Co., 102 Reade St., New York, N. Y.
Paragon Machine Co., 77 South Ave., Rochester, N. Y.
The C. F. Pease Co., 866 N. Franklin St., Chicago, Ill.
Spaulding-Moss Co., 42 Franklin St., Boston, Mass.
Henry Vogt Machine Co., Louisville, Ky. See page 5.

BOILERS

American Gas Construction Co., Newton, Iowa
Babcock-Wilcox and Goldie-McCulloch, Ltd., Galt, Ontario, Canada
Bethlehem Shipbuilding Corp., Bethlehem, Pa.
Bigelow Co., 76 River St., New Haven, Conn.
Brass Foundry & Machine Co., Fort Wayne, Ind.
Briggs Weaver Machinery Co., Dallas, Texas
The Brownell Co., Dayton, Ohio
Casey-Hodges Mfg. Co., Chattanooga, Tenn.
Continental Supply Co., St. Louis, Missouri

The Cullen Co., Clinton, Iowa
D. M. Dillon Steam Boiler Works, Fitchburg, Mass.
John Dollinger, Jr., Inc., Box 423, Beaumont, Texas
Eclipse Fuel Engineering Co., Rockford, Ill
Equitable Equipment Co., Inc., New Orleans, La.
Erie City Iron Works, Erie, Pa.
R. B. Everett Co., Houston, Texas
A. B. Farquhar, Co., Ltd., 142 N. Duke St., York, Pa.
Finucane Boiler Works, Houston, Texas.
Fitzgibbons Boiler Co., Inc., 47 W. 42nd St., New York, N. Y.
Fort Worth Steel & Machinery Co., Fort Worth, Texas
Frost Mfg. Co., Galesburg, Ill.
Godfrey, Keeler Co., 70 Warren St., New York, N. Y.
A. D. Granger Co., 15 Park Row, New York, N. Y.
Heine Boiler Co., St. Louis, Mo.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
E. Keeler Co., Williamsport, Pa.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
James Leffel & Co., Springfield, O.
E. Leonard & Sons, Ltd., York St., London, Canada.
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.
McAleenan Bros. Co., Twenty-fifth and Railroad, Pittsburgh, Pa.
McNamar Boiler Works, Bridgeport, Ill.
Nagle Engine & Boiler Works, Erie, Pa.
National Supply Co., Toledo, Ohio
New York Engineering Co., 2 Rector St., New York, N. Y.
Ocean Shore Iron Works, 550 Eighth St., San Francisco, Calif.
Oil Well Supply Co., Pittsburgh, Pa.
Oswego Boiler & Engine Co., Oswego, N. Y.
H. A. Paine Co., 419-20 Cotton Exchange Bldg., Houston, Texas.
Pennsylvania Boiler Works, 12th and Pa. Ave., Erie, Pa.
Pioneer Tank & Boiler Co., Box 1926, Tulsa, Okla. See page 157.
Prospect Boiler Co., Ward St. and Raritan River R. R., New Brunswick, N. J.
The Stanwood Corp., Cincinnati, O.
Union Iron Works, Selma, Ala.
Walsh & Weidner Boiler Co., Chattanooga, Tenn.
C. J. Walton & Son, 1221 W. Main St., Louisville, Ky.
Wickes Boiler Co., Saginaw, Mich.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

BOILERS, Emergency
Plouff Co., 170 Summer St., Boston, Mass.

BOILER FEED UNITS, Centrifugal
Aldrich Pump Co., Foot of Pine St., Allentown, Pa.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Babcock-Wilcox and Goldie-McCulloch, Ltd., Galt, Ontario, Canada
Briggs Weaver Machinery Co., Dallas, Texas
De Laval Steam Turbine Co., Trenton, N. J. See page 123.
Fairbanks, Morse & Co., 900 S. Wabash Ave., Chicago, Ill.
Frederick Iron & Steel Co., Frederick, Md.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Byron Jackson Pump Mfg. Co., Inc., 412 S. San Pedro St., Los Angeles, Calif.
Le Courteney Co., 4 Maine, Newark, N. J.
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.
May Machinery Co., Second National Bank Bldg., Houston, Tex.
John H. McGown Co., 910 4th Natl. Bk. Bldg., Cincinnati, Ohio
National Transit Pump & Machine Co., Oil City, Pa.
H. A. Paine Co., 419-20 Cotton Exchange Bldg., Houston, Texas.
Rider-Erickson Engine Corp., 11 Broadway, New York, N. Y.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Tennant Co., Union National Bank Bldg., Houston, Texas.
Twinvolute Pump & Mfg. Co., 216 High St., Newark, N. J.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

BOILERS, Fire Box
Bigelow Co., 76 River St., New Haven, Conn.
Briggs Weaver Machinery Co., Dallas, Texas
The Brownell Co., Dayton Ohio
The Cullen Co., Clinton, Iowa
John Dollinger, Jr., Inc., Box 423, Beaumont, Texas
T. F. Downey Boiler Works, 2600-10 W. Grand Ave., Chicago, Ill.
Eclipse Fuel Engineering Co., Rockford, Ill.
Erie City Iron Works, Erie, Pa.
Eureka Fire Brick Works, 1507 First Nat. Bank Bldg., Pittsburgh, Pa.
A. B. Farquhar, Co., Ltd., 142 N. Duke St., York, Pa.
Fitzgibbons Boiler Co., Inc., 47 W. 42nd St., New York, N. Y.
Frost Mfg. Co., Galesburg, Ill.
A. D. Granger Co., 15 Park Row, New York, N. Y.
E. Keeler Co., Williamsport, Pa.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Kewanee Boiler Co., Kewanee, Ill.
James Leffel & Co., Springfield, O.
E. Leonard & Sons, Ltd., York St., London, Canada.
Michelmann Steel Construction Co., Cor. of Second & Hampshire Quincy, Ill.
Nagle Engine & Boiler Works, Erie, Pa.
National Supply Co., Toledo, Ohio
Oil Well Supply Co., Pittsburgh, Pa.
Oswego Boiler & Engine Co., Oswego, N. Y.
H. A. Paine Co., 419-20 Cotton Exchange Bldg., Houston, Texas.
Pennsylvania Boiler Works, 12th and Pa. Ave., Erie, Pa.
Plibrico Jointless Fire Brick Co., 1130 Clay St., Chicago, Ill. See page 9.
The Randle Machinery Co., 1723 Power St., Cincinnati, Ohio
The Stanwood Corp., Cincinnati, O.
Titusville Iron Works, Titusville, Pa.
The Union Iron Works, Erie, Pa.
Henry Vogt Machine Co., Louisville, Ky. See page 5.
Walsh & Weidner Boiler Co., Chattanooga, Tenn.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

BOILERS, High Pressure
Babcock-Wilcox and Goldie-McCulloch, Ltd., Galt, Ontario, Canada
The Badenhausen Corp., 1011 Chestnut St., Philadelphia, Pa.
Bigelow Co., 76 River St., New Haven, Conn.
Brass Foundry & Machine Co., Fort Wayne, Ind.
Briggs Weaver Machinery Co., Dallas, Texas
The Brownell Co., Dayton, Ohio
Casey-Hodges Mfg. Co., Chattanooga, Tenn.
Continental Supply Co., St. Louis, Missouri
Cross Engineering Co., 700 Baltimore Ave., Kansas City, Mo.
The Cullen Co., Clinton, Iowa
D. M. Dillon Steam Boiler Works, Fitchburg, Mass.
John Dollinger, Jr., Inc., Box 423, Beaumont, Texas
T. F. Downey Boiler Works, 2600-10 W. Grand Ave., Chicago, Ill.
Eclipse Fuel Engineering Co., Rockford, Ill.
Erie City Iron Works, Erie, Pa.
R. B. Everett Co., Houston, Texas
A. B. Farquhar, Co., Ltd., 142 N. Duke St., York, Pa.
Fitzgibbons Boiler Co., Inc., 47 W. 42nd St., New York, N. Y.
Frost Mfg. Co., Galesburg, Ill.
A. D. Granger Co., 15 Park Row, New York, N. Y.
Heine Boiler Co., St. Louis, Mo.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
E. Keeler Co., Williamsport, Pa.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Kewanee Boiler Co., Kewanee, Ill.
James Leffel & Co., Springfield, O.
E. Leonard & Sons, Ltd., York St., London, Canada.
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.
Michelmann Steel Construction Co., Cor. of Second & Hampshire Quincy, Ill.
McAleenan Bros. Co., Twenty-fifth and Railroad, Pittsburgh, Pa.
McNamar Boiler Works, Bridgeport, Ill.
Milwaukee Boiler Mfg. Co., 35th St. & National Ave., Milwaukee, Wis.
Nagle Engine & Boiler Works, Erie, Pa.
National Supply Co., Toledo, Ohio
New York Engineering Co., 2 Rector St., New York, N. Y.
Ocean Shore Iron Works, 550 Eighth St., San Francisco, Calif.
Oswego Boiler & Engine Co., Oswego, N. Y.
Page Water Tube Boiler Co., 815-819 Larrabee St., Chicago, Ill.
H. A. Paine Co., 419-20 Cotton Exchange Bldg., Houston, Texas.
Pennsylvania Boiler Works, 12th and Pa. Ave., Erie, Pa.
The Randle Machinery Co., 1723 Power St., Cincinnati, O.
Titusville Iron Works, Titusville, Pa.
The Union Iron Works, Erie, Pa.
Union Iron Works, Selma, Ala.
Henry Vogt Machine Co., Louisville, Ky. See page 5.
Walsh & Weidner Boiler Co., Chattanooga, Tenn.
Wickes Boiler Co., Saginaw, Mich.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

BOILERS, Low Pressure
Babcock-Wilcox and Goldie-McCulloch, Ltd., Galt, Ontario, Canada
Bigelow Co., 76 River St., New Haven, Conn.
Brass Foundry & Machine Co., Fort Wayne, Ind.
Briggs Weaver Machinery Co., Dallas, Texas
The Brownell Co., Dayton, Ohio
Continental Supply Co., St. Louis, Missouri
The Cullen Co., Clinton, Iowa
D. M. Dillon Steam Boiler Works, Fitchburg, Mass.
John Dollinger, Jr., Inc., Box 423, Beaumont, Texas
Eclipse Fuel Engineering Co., Rockford, Ill.
Erie City Iron Works, Erie, Pa.
Fitzgibbons Boiler Co., Inc., 47 W. 42nd St., New York, N. Y.
Frost Mfg. Co., Galesburg, Ill.
Gorton & Lidgerwood Co., 96 Liberty St., New York, N. Y.
A. D. Granger Co., 15 Park Row, New York, N. Y.
Jas. G. Heggie & Sons, Joliet, Ill.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
E. Keeler Co., Williamsport, Pa.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Kewanee Boiler Co., Kewanee, Ill.
Keystone Boiler & Foundy Co., Landisville, Pa.
Lamprey Co., Westfield, Mass.
E. Leonard & Sons, Ltd., York St., London, Canada.
Milwaukee Boiler Mfg. Co., 35th St. & National Ave., Milwaukee, Wis.
Nagle Engine & Boiler Works, Erie, Pa.
National Supply Co., Toledo, Ohio
Ocean Shore Iron Works, 550 Eighth St., San Francisco, Calif.
Oswego Boiler & Engine Co., Oswego, N. Y.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Pioneer Tank & Boiler Co., Box 1926, Tulsa, Okla. See page 157.
Sims Co., Erie, Pa.
The Stanwood Corp., Cincinnati, O.
Titusville Iron Works, Titusville, Pa.
The Union Iron Works, Erie, Pa.
Union Iron Works, Selma, Ala.
Henry Vogt Machine Co., Louisville, Ky. See page 5.
Walsh & Weidner Boiler Co., Chattanooga, Tenn.
C. J. Walton & Son, 1221 W. Main St., Louisville, Ky.
Wickes Boiler Co., Saginaw, Mich.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

BOILER SCALE REMOVER
Ward Chemical Company, Tulsa Okla. See page 119.

BOILER SCALE TREATMENT
Boiler Kote Co., 608 S. Dearborn St., Chicago, Ill.
Ward Chemical Company, Tulsa, Okla. See page 119.

BOILERS, Tubular Horizontal
American Gas Construction Co., Newton, Iowa
Babcock-Wilcox and Goldie-McCulloch, Ltd., Galt, Ontario, Canada
Bigelow Co., 76 River St., New Haven, Conn.
Brass Foundry & Machine Co., Fort Wayne, Ind.
Briggs Weaver Machinery Co., Dallas, Texas
The Brownell Co., Dayton, Ohio
Casey-Hodges Mfg. Co., Chattanooga, Tenn.
Continental Supply Co., St. Louis, Missouri
The Cullen Co., Clinton, Iowa
D. M. Dillon Steam Boiler Works, Fitchburg, Mass.
John Dollinger, Jr., Inc., Box 423, Beaumont, Texas
Erie City Iron Works, Erie, Pa.
A. B. Farquhar, Co., Ltd., 142 N. Duke St., York, Pa.
Fitzgibbons Boiler Co., Inc., 47 W. 42nd St., New York, N. Y.
Fort Worth Steel & Machinery Co., Fort Worth, Texas
Frost Mfg. Co., Galesburg, Ill.
A. D. Granger Co., 15 Park Row, New York, N. Y.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
E. Keeler Co., Williamsport, Pa.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Kewanee Boiler Co., Kewanee, Ill.
James Leffel & Co., Springfield, O.
E. Leonard & Sons, Ltd., York St., London, Canada.
Lucey Mfg. Corp'n., Woolworth Bldg., New York, N. Y.
McEwen Bros., Wellsville, N. Y.
McNamar Boiler Works, Bridgeport, Ill.
Michelmann Steel Construction Co., Cor. of Second & Hampshire Quincy, Ill.
Milwaukee Boiler Mfg. Co., 35th St. & National Ave., Milwaukee, Wis.
Nagle Engine & Boiler Works, Erie, Pa.
National Supply Co., Toledo, Ohio
Ocean Shore Iron Works, 550 Eighth St., San Francisco, Calif.
Oil Well Supply Co., Pittsburgh, Pa.
Oswego Boiler & Engine Co., Oswego, N. Y.
H. A. Paine Co., 419-20 Cotton Exchange Bldg., Houston, Texas.
Pennsylvania Boiler Works, 12th and Pa. Ave., Erie, Pa.
The Randle Machinery Co., 1723 Power St., Cincinnati, Ohio
The Stanwood Corp., Cincinnati, O.
Titusville Iron Works, Titusville, Pa.
The Union Iron Works, Erie, Pa.
Union Iron Works, Selma, Ala.
Henry Vogt Machine Co., Louisville, Ky. See page 5.
Walsh & Weidner Boiler Co., Chattanooga, Tenn.
C. J. Walton & Son, 1221 W. Main St., Louisville, Ky.
Western Gas Construction Co., Fort Wayne, Ind.
Wickes Boiler Co., Saginaw, Mich.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

BOILERS, Water Tube
Babcock & Wilcox Co., 85 Liberty St., New York, N. Y.
Babcock-Wilcox and Goldie-McCulloch, Ltd., Galt, Ontario, Canada.
The Badenhausen Corp., 1011 Chestnut St., Philadelphia, Pa.
Bethlehem Shipbuilding Corp., Bethlehem, Pa.
Bigelow Co., 76 River St., New Haven, Conn.
Brass Foundry & Machine Co., Fort Wayne, Ind.
Briggs Weaver Machinery Co., Dallas, Texas
Casey-Hodges Mfg. Co., Chattanooga, Tenn.
The Cullen Co., Clinton, Iowa.
T. F. Downey Boiler Works, 2600-10 W. Grand Ave., Chicago, Ill.
Erie City Iron Works, Erie, Pa.
R. B. Everett Co., Houston, Texas
Fort Worth Steel & Machinery Co., Fort Worth, Texas
Frost Mfg. Co., Galesburg, Ill.
A. D. Granger Co., 15 Park Row, New York, N. Y.
Heine Boiler Co., St. Louis, Mo.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
E. Keeler Co., Williamsport, Pa.

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Natural Gasoline as Skelly makes it

First it takes careful management . . . then modern plant equipment . . . location . . . plenty of tank cars . . . finally keen desire on the part of employees to make their product excel—all these to produce Natural Gasoline as Skelly makes it.

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Keystone Boiler & Foundy Co., Landisville, Pa.
E. Leonard & Sons, Ltd., York St., London, Canada.
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.
McAleenan Bros. Co., Twenty-fifth and Railroad, Pittsburgh, Pa.
Nagle Engine & Boiler Works, Erie, Pa.
National Supply Co., Toledo, Ohio
New York Engineering Co., 2 Rector St., New York, N. Y.
Ocean Shore Iron Works, 550 Eighth St., San Francisco, Calif.
Oswego Boiler & Engine Co., Oswego, N. Y.
Page Water Tube Boiler Co., 815-819 Larrabee St., Chicago, Ill.
H. A. Paine Co., 419-20 Cotton Exchange Bldg., Houston, Texas
The Randle Machinery Co., 1723 Power St., Cincinnati, Ohio
Southwestern Engineering Co., Hollingsworth Bldg., Los Angeles, Cal. See page 109.
The Union Iron Works, Erie, Pa.
Union Iron Works, Selma, Ala.
Henry Vogt Machine Co., Louisville, Ky. See page 5.
Walsh & Weidner Boiler Co., Chattanooga, Tenn.
Wickes Boiler Co., Saginaw, Mich.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

BOLTS
The Acme Tank Car Co., Coffeyville, Kansas
Bethlehem Steel Co., Bethlehem, Pa.
Brazelton, Wessendorff & Nelms, Houston, Texas
Briggs Weaver Machinery Co., Dallas, Texas
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Gulf Coast Machine & Supply Co., Beaumont, Texas.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Kansas City Structural Steel Co., Kansas City, Kansas.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
National Valve & Mfg. Co., 31st and Liberty, Pittsburgh, Pa.
Oil Well Supply Co., Pittsburgh, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond Va.
Joseph T. Ryerson & Sons, 2558 W. 16th St., Chicago, Ill.
Sculley Steel & Iron Co., Chicago, Ill.
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
Union Iron Works, Selma, Ala.
U. S. Indestructible Gasket Co., 829 E. 15th St., Brooklyn, N. Y.
Walworth Company, 88 Pearl St., Boston, Mass.
Wm. Wharton, Jr. & Co., Inc., 30 Church St., New York, N. Y.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.
York Manufacturing Co., York, Pa.

BOLTS, Boiler
Barnhart-Davis Co., Warren, Pa.
Continental Supply Co., St. Louis, Missouri
John Dollinger, Jr., Inc., Box 423, Beaumont, Texas
Fort Worth Steel & Machinery Co., Fort Worth, Texas
Peden Iron & Steel Co., Houston, Texas. See page 85.
Sculley Steel & Iron Co., Chicago, Ill.
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
Union Iron Works, Selma, Ala.
Henry Vogt Machine Co., Louisville, Ky. See page 5.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

BOLTS, Boiler Patch
Briggs Weaver Machinery Co., Dallas, Texas

BOLTS, Brass
Arthur Harris & Co., 212 Curtis St., Chicago, Ill.

BOLTS, Tank
Black, Sivalls & Bryson, Bartlesville, Okla.

BOLTS AND NUTS
The Acme Tank Car Co., Coffeyville, Kansas
Bethlehem Steel Co., Bethlehem, Pa.
Briggs Weaver Machinery Co., Dallas, Texas
Continental Supply Co., St. Louis, Missouri
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Fort Worth Steel & Machinery Co., Fort Worth, Texas
Gulf Coast Machine & Supply Co., Beaumont, Texas.
U. T. Hungerford Brass & Copper Co., 80 Lafayette St., New York, N. Y.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Kansas City Structural Steel Co., Kansas City, Kansas.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
National Supply Co., Toledo, Ohio
North American Car Corp., 327 S. LaSalle St., Chicago, Ill. See page 156.
Oil Well Supply Co., Pittsburgh, Pa.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Joseph T. Ryerson & Sons, 2558 W. 16th St., Chicago, Ill.
Sculley Steel & Iron Co., Chicago, Ill.
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
Union Iron Works, Selma, Ala.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Walworth Company, 88 Pearl St., Boston, Mass.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.
York Manufacturing Co., York, Pa.

BOMBS AND GAUGES
Greene Brothers, Wichita Falls, Texas. See page 61.
C. J. Tagliabue Mfg. Co., 18 33rd St., Brooklyn, N. Y. See page 49.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.

BOOSTERS, Gas
American Gas Construction Co., Newton, Iowa
American Gas Furnace Co., Lafayette, Spring and Elizabeth St., Elizabeth, N. J.
Bayley Mfg. Co., 73 Greenbush St., Milwaukee, Wis.
Beach-Russ Co., 30 Church St., New York, N. Y.
Chicago Pneumatic Tool Co., 6 E. 44th St., New York, N. Y.
Clark Bros. Co., Olean, N. Y. See pages 38-39.
Cooper, C. & G., Co., Mt. Vernon, Ohio.
Connersville Blower Co., Connersville, Ind.
Crowell Mfg. Co., 315 Franklin Ave., Brooklyn, N. Y.
De Laval Steam Turbine Co., Trenton, N. J. See page 123.
Eclipse Fuel Engineering Co., Rockford, Ill.
Ingersoll-Rand Co., 11 Broadway, New York, N. Y.
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.
The P. H. & F. M. Roots Co., Connersville, Ind. See inside front cover.

BORERS, Bung
Weimar Engineering Works, Westmoreland & Jasper Sts., Philadelphia, Pa.

BOTTLES, Oil Sample
Fort Worth Laboratories, 828½ Monroe St., Ft. Worth, Texas. See page 158.
Whitall-Tatum Co., Philadelphia, Pa.

BOXES, Condensing
American Tank Co., Okla. City, Okla.
Barnhart-Davis Co., Warren, Pa.
Butler Mfg. Co., 1124 Grand Ave., Kansas City, Mo.
Cross Engineering Co., 700 Baltimore Ave., Kansas City, Mo. See page 129.
Finucane Boiler Works, Houston, Texas.
Fort Worth Steel & Machinery Co., Fort Worth, Texas
Graver Corp., 414 Todd Ave., E. Chicago, Ind. See page 13.
Hartwell Iron Works, Houston, Texas
Kansas City Structural Steel Co., Kansas City, Kansas.
The Kaw Boiler Works Co., Kansas City, Kansas. See page 117.
National Supply Co., Toledo, Ohio
New York Engineering Co., 2 Rector St., New York, N. Y.
Petroleum Iron Works, Sharon, Pa.
Pioneer Tank & Boiler Co., Box 1926, Tulsa, Okla. See page 157.
Refinery Supply Co., Tulsa, Okla. See page 44.
Riter-Conley Co., Oliver Bldg., Pittsburgh, Pa.
Ross Heater & Mfg. Co., Inc., Buffalo, N. Y.
Tulsa Boiler & Machinery Co., P. O. Box 1963, Tulsa, Okla.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
E. Van Noorden Co., 100 Magazine St. Roxbury, Mass.

BOXES, Cooling
Barnhart-Davis Co., Warren, Pa.
Cross Engineering Co., 700 Baltimore Ave., Kansas City, Mo. See page 129.
Finucane Boiler Works, Houston, Texas.
Hartwell Iron Works, Houston, Texas
Kansas City Structural Steel Co., Kansas City, Kansas.
The Kaw Boiler Works Co., Kansas City, Kansas. See page 161.
National Supply Co., Toledo, Ohio
New York Engineering Co., 2 Rector St., New York, N. Y.
Petroleum Iron Works, Sharon, Pa.
Pioneer Tank & Boiler Co., Box 1926, Tulsa, Okla. See page 157.
Riter-Conley Co., Oliver Bldg., Pittsburgh, Pa.
Ross Heater & Mfg. Co., Inc., Buffalo, N. Y.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
E. Van Noorden Co., 100 Magazine St. Roxbury, Mass.

BOXES, Junction
Barnhart-Davis Co., Warren, Pa.
Harrisburg Pipe & Pipe Bending Co., Houston, Texas
Key Boiler & Equipment Co., 27th and McCasland, E. St. Louis, Ill.
Langstadt-Meyer Co., Appleton, Wis.
The Pyle-National Co., Chicago, Ill.
Tulsa Boiler & Machinery Co., P. O. Box 1963, Tulsa, Okla.
E. Van Noorden Co., 100 Magazine St. Roxbury, Mass.

BOXES, Knockout
Barnhart-Davis Co., Warren, Pa.
Fort Worth Steel & Machinery Co., Fort Worth, Texas
Griscom-Russell Co., 285 Madison Ave., New York, N. Y. See page 133.
Langstadt-Meyer Co., Appleton, Wis.
Pioneer Tank & Boiler Co., Box 1926, Tulsa, Okla. See page 157.
Schutte & Koerting Co., 1165 Thompson St., Philadelphia, Pa. See page 149.
Tulsa Boiler & Machinery Co., P. O. Box 1963, Tulsa, Okla.
E. Van Noorden Co., 100 Magazine St. Roxbury, Mass.

BOXES, Look
Barnhart-Davis Co., Warren, Pa.
Bethlehem Shipbuilding Corp., Bethlehem, Pa.
C. F. Braun & Co., Alhambra, Cal. See pages 78-79.
Brooks Engineering Corp., 314 E. 12th St., Los Angeles, Calif.
Cross Engineering Co., 700 Baltimore Ave., Kansas City, Mo. See page 129.
McEwen Bros., Wellsville, N. Y.
Joseph Oat & Sons, 232 Quarry St., Philadelphia, Pa.
Oil Conservation Engineering Co., Cleveland, Ohio. See page 4.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
E. Van Noorden Co., 100 Magazine St. Roxbury, Mass.
Western Iron & Foundry Co., Wichita, Kansas. See page 89.

BOXES, Receiving
Joseph Reid Gas Engine Co., Oil Pa.

BOXES, Shop
Lyon Metallic Mfg. Co., Aurora, Ill.

BOXES, Tool
Lyon Metallic Mfg. Co., Aurora, Ill.

BOXES, Waste
Lyon Metallic Mfg. Co., Aurora, Ill.

BRAKES, Electric
Electric Controller & Mfg. Co., 2700 E. Seventy-Ninth St., Cleveland, Ohio.

BRAKE LINING, Asbestos
Keasbey & Mattison Co., Ambler, Pa.

BRASS GOODS
Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
Bridgeport Brass Co., Bridgeport, Conn.
Briggs Weaver Machinery Co., Dallas, Texas
Butler Mfg. Co., 1124 Grand Ave., Kansas City, Mo.
DeSoto Foundry & Machine Co., Mansfield, La.
Essex Brass Corp., 2000 Franklin St., Detroit, Mich.
Greene Brothers, Wichita Falls, Texas. See page 61.
Gulf Coast Machine & Supply Co., Beaumont, Texas.
Arthur Harris & Co., 212 Curtis St., Chicago, Ill.
Hart Co., Inc., Williamsport, Pa.
U. T. Hungerford Brass & Copper Co., 80 Lafayette St., New York, N. Y.
The Kennedy Valve Mfg. Co., Elmira, N. Y.
Lunkenheimer Co., Cincinnati, O. See page 17.
Michigan Lubricator Co., 3643 Beaubien St., Detroit, Mich.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
Joseph Oat & Sons, 232 Quarry St., Philadelphia, Pa.
Oil Well Supply Co., Pittsburgh, Pa.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Southern Brass Mfg. Co., Houston, Texas.
Union Water Meter Co., Worcester, Mass.
Walworth Company, 88 Pearl St., Boston, Mass.
D. T. Williams Valve Co., Spring Grove Ave. & Township St., Cincinnati, Ohio. See page 35.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

BRASS, Sheet
American Brass Co., Waterbury, Conn.
American Lubricator Co., Detroit, Mich.
Bridgeport Brass Co., Bridgeport, Conn.
Colburn Gear & Mfg. Co., 98 Holmes St., Norfolk Downs, Mass.
U. T. Hungerford Brass & Copper Co., 80 Lafayette St., New York, N. Y.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Southern Brass Mfg. Co., Houston, Texas.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

BRAZING APPARATUS
Brazelton, Wessendorff & Nelms, Houston, Texas
Eclipse Fuel Engineering Co., Rockford, Ill.
Hauck Mfg. Co., 127 Tenth St., Brooklyn, N. Y.
Oxweld Acetylene Co., Long Island City, L. I., N. Y.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Smiths Inventions, Inc., 2636 Fourth St., S.E., Minneapolis, Minn.
Torchweld Equipment Co., 224 No. Carpenter St., Chicago, Ill.

BREAKERS, Concrete
Sullivan Machinery Co., 122 S. Michigan Ave., Chicago, Ill.

We are now located in our new home at 524-6-8 Seventh Street and have greatly increased our stocks and are in better position than ever to make immediate shipment from stock.

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Refinery and Gas Plant Equipment—Power Plant Specialties
Laboratory Supplies—Chemicals

GREENE BROTHERS

WICHITA FALLS, TEXAS **DALLAS, TEXAS**

BREECHINGS, Boiler
American Chimney Corp., 147 Fourth Ave., New York, N. Y.
American Tank Co., Okla. City, Okla.
Babcock-Wilcox and Goldie-McCulloch, Ltd., Galt, Ontario, Canada
Brass Foundry & Machine Co., Fort Wayne, Ind.
Briggs Weaver Machinery Co., Dallas, Texas
The Brownell Co., Dayton, Ohio
Casey-Hodges Mfg. Co., Chattanooga, Tenn.
Chattanooga Boiler & Tank Co., Box 316, Chattanooga, Tenn.
Cross Engineering Co., 700 Baltimore Ave., Kansas City, Mo. See page 129.
The Cullen Co., Clinton, Iowa
John Dollinger, Jr., Inc., Box 423, Beaumont, Texas
Erie City Iron Works, Erie, Pa.
Finucane Boiler Works, Houston, Texas.
Fort Worth Steel & Machinery Co., Fort Worth, Texas
A. D. Granger Co., 15 Park Row, New York, N. Y.
Graver Corp., 414 Todd Ave., E. Chicago, Ind. See page 13.
Hartwell Iron Works, Houston, Texas
Heine Boiler Co., St. Louis, Mo.
Kansas City Structural Steel Co., Kansas City, Kansas.
The Kaw Boiler Works Co., Kansas City, Kansas. See page 117.
L. O. Koven & Brother, Inc., 154 Ogden Ave., Jersey City, N.J.
McAleenan Bros. Co., Twenty-fifth and Railroad, Pittsburgh, Pa.
McEwen Bros., Wellsville, N. Y.
McNamar Boiler Works, Bridgeport, Ill.
Milwaukee Boiler Mfg. Co., 35th St. & National Ave., Milwaukee, Wis.
New York Engineering Co., 2 Rector St., New York, N. Y.
R. S. Newbold & Son Co., Norristown, Pa.
Ocean Shore Iron Works, 550 Eighth St., San Francisco, Calif.
Petroleum Iron Works, Sharon, Pa.
Pioneer Tank & Boiler Co., Box 1926, Tulsa, Okla. See page 157.
Prospect Boiler Co., Ward St. and Raritan River R. R., New Brunswick, N. J.
Quaker City Iron Works, Richmond & Tioga Sts., Philadelphia Pa.
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond Va.
Riter-Conley Co., Oliver Bldg. Pittsburgh, Pa.
Rust Engineering Co., 502 District National Bank Bldg., Washington, D. C.
The Stanwood Corp., Cincinnati, O
M. H. Treadwell Co. of Ill., 208 S. La Salle St., Chicago, Ill.
Tulsa Boiler & Machinery Co., P O. Box 1963, Tulsa, Okla.
Union Iron Works, Selma, Ala.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

BREECHINGS, Smoke
American Chimney Corp., 147 Fourth Ave., New York, N. Y.
American Tank Co., Okla. City, Okla.
Babcock-Wilcox and Goldie-McCulloch, Ltd., Galt, Ontario, Canada
Brass Foundry & Machine Co., Fort Wayne, Ind.
Briggs Weaver Machinery Co., Dallas, Texas
The Brownell Co., Dayton, Ohio
Casey-Hodges Mfg. Co., Chattanooga, Tenn.
Chattanooga Boiler & Tank Co., Box 316, Chattanooga, Tenn.
Cross Engineering Co., 700 Baltimore Ave., Kansas City, Mo. See page 129.
The Cullen Co., Clinton, Iowa
John Dollinger, Jr., Inc., Box 4..3 Beaumont, Texas
Erie City Iron Works, Erie, Pa.
Finucane Boiler Works, Houston Texas.
Fort Worth Steel & Machinery Co., Fort Worth, Texas
A. D. Granger Co., 15 Park Row, New York, N. Y.
Graver Corp., 414 Todd Ave., E. Chicago, Ind. See page 13.
Hartwell Iron Works, Houston, Texas
Heine Boiler Co., St. Louis, Mo.
Kansas City Structural Steel Co., Kansas City, Kansas.
L. O. Koven & Brother, Inc., 154 Ogden Ave., Jersey City, N.J.
McAleenan Bros. Co., Twenty-fifth and Railroad, Pittsburgh, Pa.
McEwen Bros., Wellsville, N. Y.
McNamar Boiler Works, Bridgeport, Ill.
Milwaukee Boiler Mfg. Co., 35th St. & National Ave., Milwaukee, Wis.
New York Engineering Co., 2 Rector St., New York, N. Y.
R. S. Newbold & Son Co., Norristown, Pa.
Ocean Shore Iron Works, 550 Eighth St., San Francisco, Calif.
Pioneer Tank & Boiler Co., Box 1926, Tulsa, Okla. See page 157.
Prospect Boiler Co., Ward St. and Raritan River R. R., New Brunswick, N. J.
Quaker City Iron Works, Richmond & Tioga Sts., Philadelphia, Pa.
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
Rust Engineering Co., 502 District National Bank Bldg., Washington, D. C.
Shevlin Engineering Co., Inc., 259 W. 34th St., New York, N. Y.
The Stanwood Corp., Cincinnati, O.
M. H. Treadwell Co. of Ill., 208 S. La Salle St., Chicago, Ill.
Tulsa Boiler & Machinery Co., P. O. Box 1963, Tulsa, Okla.
Union Iron Works, Selma, Ala.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

BRICK
Acme Brick Co., Ft. Worth, Texas
Briggs Weaver Machinery Co., Dallas, Texas
Continental Supply Co., St. Louis, Missouri
Elgin Butler Brick & Tile Co., Austin, Texas
Eureka Fire Brick Works, 1507 First Nat. Bank Bldg., Pittsburgh, Pa.
Harbison Walker Refractories Co., Farmers' Bank Bldg., Pittsburgh
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.
McLeod & Henry Co., Troy, N. Y
Rust Engineering Co., 502 District National Bank Bldg., Washington, D. C.
United Clay Products Corp., Lee Bldg., Kansas City, Mo.
Walsh Fire Clay Products Co., 4073 N. Main St., St. Louis, Mo. See page 113.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

BRICK, Chemical
American Chimney Corp., 147 Fourth Ave., New York, N. Y.
Greene Brothers, Wichita Falls, Texas. See page 61.
Rust Engineering Co., 502 District National Bank Bldg., Washington, D. C.
Walsh Fire Clay Products Co., 4073 N. Main St., St. Louis, Mo. See page 113.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

BRICK, Fire
Acme Brick Co., Ft. Worth, Texas
American Chimney Corp., 147 Fourth Ave., New York, N. Y.
American Gas Construction Co., Newton, Iowa
Babcock & Wilcox Co., 85 Liberty St., New York, N. Y.
Botfield Refractories Co., Swanson & Clymer Sts., Philadelphia, Pa.
Briggs Weaver Machinery Co., Dallas, Texas
Chicago Retort & Fire Brick Co., 208 S. La Salle St., Chicago, Ill.
Continental Supply Co., St. Louis, Missouri
Crescent Refractories Co., Curwensville, Pa.
The Denver Fire Clay Co., P. O. Box 1107 Denver, Colorado
W. S. Dickey Clay Mfg. Co., Texarkana, Texas
Eclipse Fuel Engineering Co., Rockford, Ill.
Elgin Butler Brick & Tile Co., Austin, Texas
Eureka Fire Brick Works, 1507 First Nat. Bank Bldg., Pittsburgh, Pa.
Evens & Howard Fire Brick Co., 920 Market St., St. Louis, Mo.
A. P. Green Fire Brick Co., Mexico, Mo.
Greene Brothers, Wichita Falls, Texas. See page 61.
Harbison Walker Refractories Co., Farmers' Bank Bldg., Pittsburgh
T. K. Harris, Polytechnic Station, Fort Worth, Texas.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Laclede-Christy, St. Louis, Mo.
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.
Louisville Fire Brick Works, Inc., 4554 Louisville Av., Louisville, Ky.
Maintenance Eng. Corp., 1802 Conti St., Houston, Texas. See page 150.
McLeod & Henry Co., Troy, N. Y.
Norton Co., Worcester, Mass.
Perolin Co. of America, 1112 W. 37th St., Chicago, Illinois
Petroleum Supply Co., Houston, Texas
Plibrico Jointless Fire Brick Co., 1130 Clay St., Chicago, Ill. See page 9.
Queens Run Refractories Co., Inc., W. Water St., Lock Haven, Pa.
Refinery Supply Co., Tulsa, Okla. See page 44.
Rogers Asbestos Co., Houston, Texas.
Rust Engineering Co., 502 District National Bank Bldg., Washington, D. C.
Standard Fuel Engr'g Co., 667-687 Post Ave., So. Detroit, Mich.
Steam Boiler Equipment Co., 1750 Monadnock Block, Chicago, Ill.
Walsh Fire Clay Products Co., 4073 N. Main St., St. Louis, Mo. See page 113.
Wellsville Fire Brick Co., Wellsville, Mo.
Western Gas Construction Co., Fort Wayne, Ind.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

BRICK, Insulating
American Chimney Corp., 147 Fourth Ave., New York, N. Y.
American Gas Construction Co., Newton, Iowa
Armstrong Cork & Insulation Co., Pittsburgh, Pa.
R. V. Aycock Co., Kansas City, Mo.
Banner Rock Products Co., Alexandria, Ind.
Celite Products Co., 1320 South Hope St., Los Angeles, Calif. See Front Cover.
Eclipse Fuel Engineering Co., Rockford, Ill.
Johns-Manville Inc., 292 Madison Ave., New York, N. Y.
Nitingale & Childs Co., 195 Albany St., Cambridge Sta., Boston, Mass.
Quigley Furnace Specialties Co., 25 Church St., New York, N. Y.
Rogers Asbestos Co., Houston, Texas.
Union Fibre Co., Winona, Minn.
Western Gas Construction Co., Fort Wayne, Ind.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.

BRUSHES, Paint
Cook Paint & Varnish Co., North Kansas City, Mo. See page 7.

BRUSHES, Wire
Chicago Pneumatic Tool Co., 6 E. 44th St., New York, N. Y.

BUILDINGS, Industrial
Rust Engineering Co., 502 District National Bank Bldg., Washington, D. C.

BUILDINGS, Metal
Marion Machine, Foundry & Supply Co., Box 685, Marion, Ind.

BUILDINGS, Steel
Bethlehem Steel Co., Bethlehem, Pa.
Blaw-Knox Co., Pittsburgh, Pa.
Butler Mfg. Co., 1124 Grand Ave., Kansas City, Mo.
Chicago Steel Car Co., Chicago, Ill. See page 141.
Columbian Steel Tank Co., 1401-1631 W. Twelfth St., Kansas City, Mo.
Fort Worth Steel & Machinery Co., Fort Worth, Texas
Industrial Construction Company, Peoria Road, Tulsa, Okla.
Kansas City Structural Steel Co., Kansas City, Kansas.
Michelmann Steel Construction Co., Cor. of Second & Hampshire Quincy, Ill.
Milliken Bros. Mfg. Co., 2395 Woolworth Bldg., New York, N. Y.
Mosher Steel and Machinery Co., 900 S. Austin St., Dallas, Texas
Penn Metal Co., 675 Concord Ave., Cambridge, Mass.
Pioneer Tank & Boiler Co., Box 1926, Tulsa, Okla. See page 157.
George W. Smith Co., Dallas, Tex.
Texas Carnegie Steel Assn., Galveston, Texas.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Western Gas Construction Co., Fort Wayne, Ind.
Western Iron & Foundry Co., Wichita, Kansas. See page 89.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

BULBS, Rectifier
Brazelton, Wessendorff & Nelms, Houston, Texas
Langstadt-Meyer Co., Appleton, Wis.
Peden Iron & Steel Co., Houston, Texas. See page 85.

BURNERS, Boiler
W. N. Best Furnace & Burner Corp., 11 Broadway, New York, New York.
Black, Sivalls & Bryson, Bartlesville, Okla.
Briggs Weaver Machinery Co., Dallas, Texas
Continental Supply Co., St. Louis, Missouri
N. C. Davison Gas Burner & Welding Co., 2939 Smallman St., Pittsburgh, Pa.
Eclipse Fuel Engineering Co., Rockford, Ill.
Engineer Co., 17 Battery Place, New York, N. Y.
Fess System Co., 220 Natoma St., San Francisco, Calif.
Fuller-Lehigh Co., Fullerton, Pa.
George J. Hagan Co., 1301 Chamber of Commerce Bldg., Pittsburgh, Pa.
Hauck Mfg. Co., 127 Tenth St., Brooklyn, N. Y.
Hofmann Engineering Co., 557-9 W. Quincy St., Chicago, Ill.
Lamert & Mann Co., Wood & Waknut Sts., Chicago, Ill.
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.
Lee B. Mettler Co., 406 S. Main St., Los Angeles, Calif. See page 156.
Maxon Premix Burner Co., Muncie, Ind.
Morse Dry Dock & Repair Co., Fuel Oil Engineering Dept., Foot 56th St., Brooklyn, N. Y
National Airoil Burner Co., 9th and Thompson Sts., Philadelphia, Pa. See page 20.
National Supply Co., Toledo, Ohio
National Transit Pump & Machine Co., Oil City, Pa.
North American Mfg. Co., 8918 Frederick Ave., Cleveland, Ohio.
Oil Well Supply Co., Pittsburgh, Pa.
Refineries Clay Co., 430 Story Bldg., Los Angeles, Calif.
Rue Mfg. Co., 228 Cherry St. Philadelphia, Pa.
Tennant Co., Union National Bank Bldg., Houston, Texas.
Wilgus Mfg. Co., 1732 E. Sixteenth St., Los Angeles, Calif.
G. E. Witt Co., Inc., 862-64 Howard St., San Francisco, Calif.

BURNERS, Electric, Oil
Langstadt-Meyer Co., Appleton, Wis.

BURNERS, Furnace
American Gas Furnace Co., Lafayette, Spring and Elizabeth St., Elizabeth, N. J.
Beach-Russ Co., 30 Church St., New York, N. Y.
W. N. Best Furnace & Burner Corp., 11 Broadway, New York, New York.
Briggs Weaver Machinery Co., Dallas, Texas
Continental Supply Co., St. Louis, Missouri

N. C. Davison Gas Burner & Welding Co., 2939 Smallman St., Pittsburgh, Pa.
Eclipse Fuel Engineering Co., Rockford, Ill.
Engineer Co., 17 Battery Place, New York, N. Y.
Fess System Co., 220 Natoma St. San Francisco, Calif.
Fuller-Lehigh Co., Fullerton, Pa.
George J. Hagan Co., Chamber of Commerce Bldg., Pittsburgh, Pa.
Hauck Mfg. Co., 127 Tenth St., Brooklyn, N. Y.
Hofmann Engineering Co., 557-9 W. Quincy St., Chicago, Ill.
Lamert & Mann Co., Wood & Waknut Sts., Chicago, Ill.
May Machinery Co., Second National Bank Bldg., Houston, Tex.
Lee B. Mettler Co., 406 S. Main St., Los Angeles, Calif. See page 156.
Morse Dry Dock & Repair Co., Fuel Oil Engineering Dept., Foot 56th St., Brooklyn, N. Y.
National Airoil Burner Co., 9th and Thompson Sts., Philadelphia, Pa. See page 20.
National Supply Co., Toledo, Ohio
North American Mfg. Co., 8918 Frederick Ave., Cleveland, Ohio.
Oil Well Supply Co., Pittsburgh, Pa.
Refineries Clay Co., 430 Story Bldg., Los Angeles, Calif.
Rue Mfg. Co., 228 Cherry St. Philadelphia, Pa.
Standard Fuel Engr'g Co., 667-687 Post Ave., So. Detroit, Mich.
Tennant Co., Union National Bank Bldg., Houston, Texas.
G. E. Witt Co., Inc., 862-64 Howard St., San Francisco, Calif.

BURNERS, Gas

The Alexander Milburn Co., 1416 W. Baltimore St., Baltimore, Md.
American Gas Furnace Co., Lafayette, Spring and Elizabeth St., Elizabeth, N. J.
Beach-Russ Co., 30 Church St., New York, N. Y.
W. N. Best Furnace & Burner Corp., 11 Broadway, New York, New York.
Black, Sivalls & Bryson, Bartlesville, Okla.
Briggs Weaver Machinery Co., Dallas, Texas
Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
Continental Supply Co., St. Louis, Missouri
N. C. Davison Gas Burner & Welding Co., 2939 Smallman St., Pittsburgh, Pa.
Eclipse Fuel Engineering Co., Rockford, Ill.
Griebel Instrument Co., Carbon dale, Pa.
George J. Hagan Co., 1301 Chamber of Commerce Bldg., Pittsburgh, Pa.
Hofmann Engineering Co., 557-9 W. Quincy St., Chicago, Ill.
Lamert & Mann Co., Wood & Waknut Sts., Chicago, Ill.
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.
The Maxon Premix Burner Co., Muncie, Ind.
Morse Dry Dock & Repair Co., Fuel Oil Engineering Dept., Foot 56th St., Brooklyn, N. Y
National Airoil Burner Co., 9th and Thompson Sts., Philadelphia, Pa. See page 20.
National Supply Co., Toledo, Ohio
North American Mfg. Co., 8918 Frederick Ave., Cleveland, Ohio.
Oil Well Supply Co., Pittsburgh, Pa.
Peabody Engineering Corp., 110 E. Forty Second St., New York, N. Y.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Refineries Clay Co., 430 Story Bldg., Los Angeles, Calif.
Geo. D. Roper Corp., Rockford, Ill.
Standard Fuel Engr'g Co., 667-687 Post Ave., So. Detroit, Mich.
Sweet & Doyle Foundry & Machine Co., Green Island, Troy, N. Y. See page 45.
Wilgus Mfg. Co., 1732 E. Sixteenth St., Los Angeles, Calif.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

BURNERS, Gas and Oil Combined

Black, Sivalls & Bryson, Bartlesville, Okla.
W. N. Best Furnace & Burner Corp., 11 Broadway, New York, New York.
Briggs Weaver Machinery Co., Dallas, Texas
N. C. Davison Gas Burner & Welding Co., 2939 Smallman St., Pittsburgh, Pa.
Eclipse Fuel Engineering Co., Rockford, Ill.
Gilbert & Barker Mfg. Co., Springfield, Mass.
George J. Hagan Co., Chamber of Commerce Bldg., Pittsburgh, Pa.
Lamert & Mann Co., Wood & Waknut Sts., Chicago, Ill.
Maxon Premix Burner Co., Muncie, Ind.
Lee B. Mettler Co., 406 S. Main St., Los Angeles, Calif. See page 156.
Morse Dry Dock & Repair Co., Fuel Oil Engineering Dept., Foot 56th St., Brooklyn, N. Y
North American Mfg. Co., 8918 Frederick Ave., Cleveland, Ohio.
Peabody Engineering Corp., 110 E. Forty Second St., New York, N. Y.
Refineries Clay Co., 430 Story Bldg., Los Angeles, Calif.
Rue Mfg. Co., 228 Cherry St. Philadelphia, Pa.
Standard Fuel Engr'g Co., 667-687 Post Ave., So. Detroit, Mich.
Tennant Co., Union National Bank Bldg., Houston, Texas.

BURNERS, Laboratory

W. N. Best Furnace & Burner Corp., 11 Broadway, New York, New York.
Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
Eclipse Fuel Engineering Co., Rockford, Ill.
Fort Worth Laboratories, 828½ Monroe St., Ft. Worth, Texas. See page 158.
Greene Brothers, Wichita Falls, Texas. See page 61.
Griebel Instrument Co., Carbon dale, Pa.
George J. Hagan Co., 1301 Chamber of Commerce Bldg., Pittsburgh, Pa.
Lamert & Mann Co., Wood & Waknut Sts., Chicago, Ill.
Morse Dry Dock & Repair Co., Fuel Oil Engineering Dept., Foot 56th St., Brooklyn, N. Y
Precision Scientific Co., 820 S. Tripp Ave., Chicago, Ill.
Refinery Supply Co., Tulsa, Okla. See page 44.
Arthur H. Thomas Co., W. Washington Square, Philadelphia, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

BURNERS, Low Pressure

W. N. Best Furnace & Burner Corp., 11 Broadway, New York, New York.
Black, Sivalls & Bryson, Bartlesville, Okla.
Continental Supply Co., St. Louis, Missouri
N. C. Davison Gas Burner & Welding Co., 2939 Smallman St., Pittsburgh, Pa.
Eclipse Fuel Engineering Co., Rockford, Ill.
Engineer Co., 17 Battery Place, New York, N. Y.
Fess System Co., 220 Natoma St., San Francisco, Calif.
Gilbert & Barker Mfg. Co., Springfield, Mass.
George J. Hagan Co., 1301 Chamber of Commerce Bldg., Pittsburgh, Pa.
Hauck Mfg. Co., 127 Tenth St., Brooklyn, N. Y.
Hofmann Engineering Co., 557-9 W. Quincy St., Chicago, Ill.
Lalor Fuel Oil System Co., Baltimore, Md.
Lamert & Mann Co., Wood & Waknut Sts., Chicago, Ill.
Maxon Premix Burner Co., Muncie, Ind.
Lee B. Mettler Co., 406 S. Main St., Los Angeles, Calif. See page 156.
Morse Dry Dock & Repair Co., Fuel Oil Engineering Dept., Foot 56th St., Brooklyn, N. Y
National Airoil Burner Co., 9th and Thompson Sts., Philadelphia, Pa. See page 20.
North American Mfg. Co., 8918 Frederick Ave., Cleveland, Ohio.
Oil Well Supply Co., Pittsburgh, Pa.
Refineries Clay Co., 430 Story Bldg., Los Angeles, Calif.
Rogers-Higgins Co., Inc., Canal Commercial Bldg., New Orleans, La.
Schutte & Koerting Co., 1165 Thompson St., Philadelphia, Pa. See page 149.
Standard Fuel Engr'g Co., 667-687 Post Ave., So. Detroit, Mich.

BURNERS, Oil

The Alexander Milburn Co., 1416 W. Baltimore St., Baltimore, Md.
W. N. Best Furnace & Burner Corp., 11 Broadway, New York, New York.
Bethlehem Shipbuilding Corp., Bethlehem, Pa.
Black, Sivalls & Bryson, Bartlesville, Okla.
Briggs Engineering Co., Inc., 219-27 Twenty-Fourth St., Brooklin, N. Y.
Briggs Weaver Machinery Co., Dallas, Texas
Continental Supply Co., St. Louis, Missouri
N. C. Davison Gas Burner & Welding Co., 2939 Smallman St., Pittsburgh, Pa.
Engineer Co., 17 Battery Place, New York, N. Y.
A. B. Farquhar, Co., Ltd., 142 N. Duke St., York, Pa.
Fess System Co., 220 Natoma St., San Francisco, Calif.
Gilbert & Barker Mfg. Co., Springfield, Mass.
George J. Hagan Co., 1301 Chamber of Commerce Bldg., Pittsburgh, Pa.
Hauck Mfg. Co., 127 Tenth St., Brooklyn, N. Y.
Hofmann Engineering Co., 557-9 W. Quincy St., Chicago, Ill.
Lalor Fuel Oil System Co., Baltimore, Md.
Lamert & Mann Co., Wood & Waknut Sts., Chicago, Ill.
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.
MacLeod Company, Cincinnati, Ohio
Maxon Premix Burner Co., Muncie, Ind.
May Machinery Co., Second National Bank Bldg., Houston, Tex.
Morse Dry Dock & Repair Co., Fuel Oil Engineering Dept., Foot 56th St., Brooklyn, N. Y
National Airoil Burner Co., 9th and Thompson Sts., Philadelphia, Pa. See Page 20.
National Supply Co., Toledo, Ohio
North American Mfg. Co., 8918 Frederick Ave., Cleveland, Ohio.
Ocean Shore Iron Works, 550 Eighth St., San Francisco, Calif.
Oil Well Supply Co., Pittsburgh, Pa.
Penberthy Injector Co., 340 Holden Ave., Detroit, Mich.
Petroleum Supply Co., Houston, Texas
Wm. Powell Co., Cincinnati, Ohio
W. S. Ray Mfg. Co., Inc., 118 New Montgomery St., San Francisco, Calif.
Refineries Clay Co., 430 Story Bldg., Los Angeles, Calif.
Joseph Reid Gas Engine Co., Oil City, Pa.
Rogers-Higgins Co., Inc., Canal Commercial Bldg., New Orleans, La.
Rue Mfg. Co., 228 Cherry St. Philadelphia, Pa.
Schutte & Koerting Co., 1165 Thompson St., Philadelphia, Pa. See page 149.
Sprague Foundry & Mfg. Co., P. O. Box 334, Council Bluffs, Iowa
Standard Fuel Engr'g Co., 667-687 Post Ave., So. Detroit, Mich.
Tennant Co., Union National Bank Bldg., Houston, Texas.
Wilgus Mfg. Co., 1732 E. Sixteenth St., Los Angeles, Calif.
G. E. Witt Co., Inc., 862-64 Howard St., San Francisco, Calif.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

BURNERS, Oil Domestic

Hofman Engineering Co., 557-9 W. Quincy St., Chicago, Ill.

BURNERS, Oil High Pressure

The Alexander Milburn Co., 1416 W. Baltimore St., Baltimore, Md.
W. N. Best Furnace & Burner Corp., 11 Broadway, New York, New York.
Babcock & Wilcox Co., 85 Liberty St., New York, N. Y.
Bethlehem Shipbuilding Corp., Bethlehem, Pa.
Briggs Weaver Machinery Co., Dallas, Texas
N. C. Davison Gas Burner & Welding Co., 2939 Smallman St., Pittsburgh, Pa.
Engineer Co., 17 Battery Place, New York, N. Y.
Fess System Co., 220 Natoma St., San Francisco, Calif.
George J. Hagan Co., Chamber of Commerce Bldg., Pittsburgh, Pa.
Hauck Mfg. Co., 127 Tenth St., Brooklyn, N. Y.
Hofmann Engineering Co., 557-9 W. Quincy St., Chicago, Ill.
Lalor Fuel Oil System Co., Baltimore, Md.
Lamert & Mann Co., Wood & Waknut, Chicago, Ill.
MacLeod Company, Cincinnati, Ohio
McEwen Bros., Wellsville, N. Y.
Morse Dry Dock & Repair Co., Fuel Oil Engineering Dept., Foot 56th St., Brooklyn, N. Y
National Airoil Burner Co., 9th and Thompson Sts., Philadelphia, Pa. See page 20.
National Supply Co., Toledo, Ohio
Peabody Engineering Corp., 110 E. Forty Second St., New York, N. Y.
Refineries Clay Co., 430 Story Bldg., Los Angeles, Calif.
Rue Mfg. Co., 228 Cherry St. Philadelphia, Pa.
Schutte & Koerting Co., 1165 Thompson St., Philadelphia, Pa. See page 149.
Standard Fuel Engr'g Co., 667-687 Post Ave., So. Detroit, Mich.
Tennant Co., Union National Bank Bldg., Houston, Texas.
Wilgus Mfg. Co., 1732 E. 16th St., Los Angeles, Calif.
G. E. Witt Co., Inc., 862-64 Howard St., San Francisco, Calif.

BURNERS, Oil, Industrial

Hofmann Engineering Co., 557-9 W. Quincy St., Chicago, Ill.

BURNERS, Still

W. N. Best Furnace & Burner Corp., 11 Broadway, New York, New York.
Briggs Weaver Machinery Co., Dallas, Texas
N. C. Davison Gas Burner & Welding Co., 2939 Smallman St., Pittsburgh, Pa.
Engineer Co., 17 Battery Place, New York, N. Y.
George J. Hagan Co., Chamber of Commerce Bldg., Pittsburgh, Pa.
Hofmann Engineering Co., 557-9 W. Quincy St., Chicago, Ill.
Lamert & Mann Co., Wood & Waknut Sts., Chicago, Ill.
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.
MacLeod Company, Cincinnati, Ohio
Maxon Premix Burner Co., Muncie, Ind.
Lee B. Mettler Co., 406 S. Main St., Los Angeles, Calif. See See page 156.
National Airoil Burner Co., 9th and Thompson Sts., Philadelphia, Pa. See page 20.
Peabody Engineering Corp., 110 E. Forty Second St., New York, N. Y.
Precision Scientific Co., 820 S. Tripp Ave., Chicago, Ill.
Refineries Clay Co., 430 Story Bldg., Los Angeles, Calif.
Rogers-Higgins Co., Inc., Canal Commercial Bldg., New Orleans, La.
Rue Mfg. Co., 228 Cherry St. Philadelphia, Pa.
Tennant Co., Union National Bank Bldg., Houston, Texas.
Wilgus Mfg. Co., 1732 E. Sixteenth St., Los Angeles, Calif.
G. E. Witt Co., Inc., 862-64 Howard St., San Francisco, Calif.

BUSTERS, Rivet

W. N. Best Furnace & Burner Corp., 11 Broadway, New York, New York.
Brazelton, Wessendorff & Nelms, Houston, Texas
N. C. Davison Gas Burner & Welding Co., 2939 Smallman St., Pittsburgh, Pa.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.

George J. Hagan Co., 1301 Chamber of Commerce Bldg., Pittsburgh, Pa.
May Machinery Co., Second National Bank Bldg., Houston, Tex.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Rue Mfg. Co., 228 Cherry St. Philadelphia, Pa.
Sculley Steel & Iron Co., Chicago, Ill.
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
Tennant Co., Union National Bank Bldg., Houston, Texas.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

C

CABINETS, Blue Print
Lyon Metallic Mfg. Co., Aurora, Ill.

CALORIMETERS
American Schaeffer & Budenberg Corp., Berry & S. 5th St., Brooklyn, N. Y. See page 153.
Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Lewis M. Ellison, 214 W. Kinzie St., Chicago, Ill.
Fort Worth Laboratories, 828½ Monroe St., Ft. Worth, Texas. See page 158
Greene Brothers, Wichita Falls, Texas. See page 61.
Griebel Instrument Co., Carbondale, Pa.
F. J. Low Co., Inc., 15 W. 44th St., New York, N. Y.
Precision Scientific Co., 820 S. Tripp Ave., Chicago, Ill.
Refinery Supply Co., Tulsa, Okla. See page 44.
Arthur H. Thomas Co., W. Washington Square, Philadelphia, Pa.
Williams, Brown & Earle, 918 Chestnut St., Philadelphia, Pa. See page 149
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

CANS
Brecht Co., 1201 Cass Ave., St. Louis, Mo.
Butler Mfg. Co., 1124 Grand Ave., Kansas City, Mo.
Continental Supply Co., St. Louis, Missouri
Geuder, Paeschke & Frey Co., Western Valley, Milwaukee, Wis.
Greene Brothers, Wichita Falls, Texas. See page 61.
Moncrief Lenoir Mfg., Co., Houston, Texas
Peden Iron & Steel Co., Houston, Texas. See page 85.
Refinery Supply Co., Tulsa, Okla. See page 44.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

CAPS
Key Boiler & Equipment Co., 27th and McCasland, E. St. Louis, Ill.

CAPS, Bubble
Barnhart-Davis Co., Warren, Pa.
The Calorizing Co., Wilkinsburg, Pa.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Winkler and Koch, 429 First National Bank, Wichita, Kansas. See page 109.

CAPS, Outlet
The Acme Tank Car Co., Coffeyville, Kansas
Barnhart-Davis Co., Warren, Pa.
Conley Tank Car Co., Pittsburgh, Pa.
North American Car Corp., 327 S. LaSalle St., Chicago, Ill.
Quaker City Iron Works, Richmond & Tioga Sts., Philadelphia, Pa.
Rogers Foundry & Machine, Joplin, Mo.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Western Iron & Foundry Co., Wichita, Kansas. See page 89.

CARS, Insulated
Chicago Steel Car Co., Chicago, Ill. See page 141.
General American Tank Car Corp., 940 Illinois Merc. Bank Bldg., Chicago, Ill. See page 145.
Greene Brothers, Wichita Falls, Texas. See page 61.
North American Car Corp., 327 S. LaSalle St., Chicago, Ill. See page 156.
Pennsylvania Car Co., Sharon, Pa.

CARS, Tank
The Acme Tank Car Co., Coffeyville, Kansas
American Car and Foundry Co., 165 Broadway, New York, N. Y.
Bethlehem Steel Co., Bethlehem, Pa.
Chicago Steel Car Co., Chicago, Ill. See page 141.
Conley Tank Car Co., Pittsburgh, Pa. See page 147.
General American Tank Car Corp., 940 Illinois Merc. Bank Bldg., Chicago, Ill. See page 145.
Greene Brothers, Wichita Falls, Texas. See page 61.
L. O. Koven & Brother, Inc., 154 Ogden Ave., Jersey City, N.J.
North American Car Corp., 327 S. LaSalle St., Chicago, Ill. See page 156.
Ocean Shore Iron Works, 550 Eighth St., San Francisco, Calif.
Pennsylvania Car Co., Sharon, Pa.
Petroleum Iron Works, Sharon, Pa.
Prospect Boiler Co., Ward St. and Raritan River R. R., New Brunswick, N. J.

CARS, Tank, Lead Lined
United Lead Co., 111 Broadway, New York, N. Y.

CASES, Blow
John Dollinger, Jr., Inc., Box 423, Beaumont, Texas
Frederick Iron & Steel Co., Frederick, Md.
Pioneer Tank & Boiler Co., Box 1926, Tulsa, Okla. See page 157.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.

CASINGS, Steel Boiler
Shevlin Engineering Co., Inc., 259 W. 34th St., New York, N. Y.

CASTINGS
The Acme Tank Car Co., Coffeyville, Kansas
Aldrich Pump Co., Foot of Pine St., Allentown, Pa.
American Engineering Co., Philadelphia, Pa.
Babcock-Wilcox and Goldie-McCulloch, Ltd., Galt, Ontario, Canada
Barnhart-Davis Co., Warren, Pa.
Bethlehem Shipbuilding Corp., Bethlehem, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
The Brady Conveyors Corp., 20 W. Jackson Blvd., Chicago, Ill.
Brass Foundry & Machine Co., Fort Wayne, Ind.
A. & F. Brown Co., 79 Barclay St., New York, N. Y.
A. W. Cadman Mfg. Co., 2814 Smallman St., Pittsburgh, Pa.
The Wm. Cramp & Sons Ship & Engine Bldg. Co., Richmond & Norris Sts., Philadelphia, Pa.
Cyclops Steel Co., Titusville, Pa.
DeSoto Foundry & Machine Co., Mansfield, La.
Julian d'Este Co., 26 Canal St., Boston, Mass.
Flynn & Emrich Co., N. E. Cor. Holliday & Saratoga Sts., Baltimore, Md.
Fuller-Lehigh Co., Fullerton, Pa.
Green Engineering Co., E. Chicago, Ind.
Greene Brothers, Wichita Falls, Texas. See page 61.
Greenlee Foundry Co., 662 W. Roosevelt Rd., Chicago, Ill.
Gulf Coast Machine & Supply Co., Beaumont, Texas.
George J. Hagan Co., 1301 Chamber of Commerce Bldg., Pittsburgh, Pa.
Hardie-Tynes Mfg. Co., Eighth Ave., & Twenty-Eighth St., Birmingham, Ala.
Harrisburg Pipe & Pipe Bending Co., Houston, Texas
Hartwell Iron Works, Houston, Texas
Heine Boiler Co., St. Louis, Mo.
Hughes Tool Co., 300 Hughes St., Houston, Texas. See insert.
Ideal Foundry & Machinery Co., Beaver Falls, Pa.
Illinois Mallable Iron Co., 1801 Diversey Blvd., Chicago, Ill.
Kansas City Structural Steel Co., Kansas City, Kansas.
E. Leonard & Sons, Ltd., York St., London, Canada.
Maintenance Eng. Corp., 1802 Contl St., Houston, Texas. See page 150.
McEwen Bros., Wellsville, N. Y.
Mesta Machine Co., Pittsburgh, Pa.
Milwaukee Boiler Mfg. Co., 35th St. & National Ave., Milwaukee, Wis.
Moloch Co., Kaukauna, Wis.
Mosher Steel and Machinery Co., 900 S. Austin St., Dallas, Texas
Myerston Foundry & Mfg. Co., 90 West St., New York, N. Y.
North American Car Corp., 327 S. LaSalle St., Chicago, Ill. See page 156.
The Ohio Steel Foundry Co., Springfield, Ohio
Oklahoma Steel Castings Co., N. Peoria Road, Tulsa, Okla.
Philadelphia Steel & Iron Co., 1008 Commercial Trust Bldg., Philadelphia, Pa.
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
Sivyer Steel Castings Company, Milwaukee, Wis.
Sprague Foundry & Mfg. Co., P. O. Box 334, Council Bluffs, Iowa
The Stanwood Corp., Cincinnati, O.
Sweet & Doyle Foundry & Machine Co., Green Island, Troy, N. Y. See page 45.
Union Iron Works, Selma, Ala.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Walker Mfg. Co., Fenton, Mich.
C. J. Walton & Son, 1221 W. Main St., Louisville, Ky.
Walworth Company, 88 Pearl St., Boston, Mass.
Western Gas Construction Co., Fort Wayne, Ind.
Western Iron & Foundry Co., Wichita, Kansas. See page 89.
Wm. Wharton, Jr. & Co., Inc., 30 Church St., New York, N. Y.
T. B. Wood's Sons Co., Chambersburg, Pa.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

CASTINGS, Aluminum
Robinson Ventilating Co., 517 House Bldg., Pittsburgh, Pa.

CASTINGS, Brass
Aldrich Pump Co., Foot of Pine St., Allentown, Pa.
American Lubricator Co., Detroit, Mich.
The Atlas Brass Foundry Co., Columbus, Ohio.
Babcock-Wilcox and Goldie-McCulloch, Ltd., Galt, Ontario, Canada
Barnhart-Davis Co., Warren, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
A. W. Cadman Mfg. Co., 2814 Smallman St., Pittsburgh, Pa.
Colburn Gear & Mfg. Co., 98 Holmes St., Norfolk Downs, Mass.
The Wm. Cramp & Sons Ship & Engine Bldg. Co., Richmond & Norris Sts., Philadelphia, Pa.
DeSoto Foundry & Machine Co., Mansfield, La.
Essex Brass Corp., 2000 Franklin St., Detroit, Mich.
Julian d'Este Co., 26 Canal St., Boston, Mass.
Gulf Coast Machine & Supply Co., Beaumont, Texas.
Hardie-Tynes Mfg. Co., Eighth Ave., & Twenty-Eighth St., Birmingham, Ala.
Arthur Harris & Co., 212 Curtis St., Chicago, Ill.
Hart Co., Inc., Williamsport, Pa.
Jos. W. Hays Corp., 1042 E. 8th St., Michigan City, Ind.
Hills-McCanna Co., 2025 Elston Ave., Chicago, Ill.
Homestead Valve Mfg. Co., Inc., Homestead, Pa.
U. T. Hungerford Brass & Copper Co., 80 Lafayette St., New York, N. Y.
Ideal Foundry & Machinery Co., Beaver Falls, Pa.
E. Leonard & Sons, Ltd., York St., London, Canada.
Mesta Machine Co., Pittsburgh, Pa.
Michigan Lubricator Co., 3643 Beaubien St., Detroit, Mich.
Moloch Co., Kaukauna, Wis.
Nute, McGehee, Geary Co., Chambersburg, Pa.
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
Scott Valve Mfg. Co., Detroit, Mich.
Rider-Erickson Engine Corp., 11 Broadway, New York, N. Y.
Union Iron Works, Selma, Ala.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Walworth Company, 88 Pearl St., Boston, Mass.
Western Iron & Foundry Co., Wichita, Kansas.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

CASTINGS, Bronze
Aldrich Pump Co., Foot of Pine St., Allentown, Pa.
Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
American Lubricator Co., Detroit, Mich.
The Atlas Brass Foundry Co., Columbus, Ohio.
Babcock-Wilcox and Goldie-McCulloch, Ltd., Galt, Ontario, Canada
Barnhart-Davis Co., Warren, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
Burdett Mfg. Co., 309 St. Johns Court, Chicago, Ill.
A. W. Cadman Mfg. Co., 2814 Smallman St., Pittsburgh, Pa.
The Wm. Cramp & Sons Ship & Engine Bldg. Co., Richmond & Norris Sts., Philadelphia, Pa.
Julian d'Este Co., 26 Canal St., Boston, Mass.
Frederick Iron & Steel Co., Frederick, Md.
Greene Brothers, Wichita Falls, Texas. See page 61.
Gulf Coast Machine & Supply Co., Beaumont, Texas.
Hardie-Tynes Mfg. Co., Eighth Ave., & Twenty-Eighth St., Birmingham, Ala.
Arthur Harris & Co., 212 Curtis St., Chicago, Ill.
Hart Co., Inc., Williamsport, Pa.
Jos. W. Hays Corp., 1042 E. 8th St., Michigan City, Ind.
Hills-McCanna Co., 2025 Elston Ave., Chicago, Ill.
Homestead Valve Mfg. Co., Inc., Homestead, Pa.
U. T. Hungerford Brass & Copper Co., 80 Lafayette St., New York, N. Y.
Ideal Foundry & Machinery Co., Beaver Falls, Pa.
Manning Maxwell & Moore, Inc., New York, N. Y.
Mesta Machine Co., Pittsburgh, Pa.
Michigan Lubricator Co., 3643 Beaubien St., Detroit, Mich.
Moloch Co., Kaukauna, Wis.
Nute, McGehee, Geary Co., Chambersburg, Pa.
Wm. Powell Co., Cincinnati, Ohio
Richmond Engineering Co., 935 Brook Ave., Box 514, Richmond, Va.
Rider-Erickson Engine Corp., 11 Broadway, New York, N. Y.
Scott Valve Mfg. Co., Detroit, Mich.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Walworth Company, 88 Pearl St., Boston, Mass.
Western Iron & Foundry Co., Wichita, Kansas. See page 89.
D. T. Williams Valve Co., Spring Grove Ave. & Township St., Cincinnati, Ohio. See page 35.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

CASTINGS, Copper
American Lubricator Co., Detroit, Mich.
The Atlas Brass Foundry Co., Columbus, Ohio.
The Wm. Cramp & Sons Ship & Engine Bldg. Co., Richmond & Norris Sts., Philadelphia, Pa.
Julian d'Este Co., 26 Canal St., Boston, Mass.
Arthur Harris & Co., 212 Curtis St., Chicago, Ill.
U. T. Hungerford Brass & Copper Co., 80 Lafayette St., New York, N. Y.
Ideal Foundry & Machinery Co., Beaver Falls, Pa.
Rider-Erickson Engine Corp., 11 Broadway, New York, N. Y.
Western Iron & Foundry Co., Wichita, Kansas. See page 89.

CASTINGS, Grey Iron
Gulf Coast Machine & Supply Co., Beaumont, Texas.
Cooper, C. & G., Co., Mt. Vernon, Ohio. See pages 30-31.
Nute, McGehee, Geary Co., Chambersburg, Pa.
Reed-Prentice Co., Worcester, Mass.

CASTINGS, Heat Resisting

The Calorizing Co., Wilkinsburg, Pa.
Cyclops Steel Co., Titusville, Pa.
Hart Co., Inc., Williamsport, Pa.
Hartwell Iron Works, Houston, Texas
Ideal Foundry & Machinery Co., Beaver Falls, Pa.
Independent Foundry Co., 73 York St., Portland, Ore.
The Ohio Steel Foundry Co., Springfield, Ohio
Western Iron & Foundry Co., Wichita, Kansas. See page 89.

CASTINGS, Iron

Hershey Machine & Foundry Co., Manheim, Pa.
Henry Vogt Machine Co., Louisville, Ky. See page 5.

CASTINGS, Mall-Iron

Jeffrey Mfg. Co., 904-99 No. Fourth St., Columbus, Ohio.
Malleable Iron Fittings Co., Banford, Conn.

CASTINGS, Steel

Allegheny Steel Co., Pittsburgh, Pa.
The Falk Corporation, Milwaukee, Wisconsin.
Hercules Supply Co., Corsicana, Texas
Malleable Iron Fittings Co., Banford, Conn.
Oklahoma Steel Castings Co., N. Peoria Road, Tulsa, Okla.
Reading Steel Castings Co., Reading, Pa.

CASTINGS, Semi-Steel

Aldrich Pump Co., Foot of Pine St., Allentown, Pa.
Nute, McGehee, Geary Co., Chambersburg, Pa.

CASTINGS, Tank Car

The Acme Tank Car Co., Coffeyville, Kansas
American Car and Foundry Co., 165 Broadway, New York, N. Y. See page 121.
Barnhart-Davis Co., Warren, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
DeSoto Foundry & Machine Co., Mansfield, La.
Erie City Iron Works, Erie, Pa.
The Falk Corporation, Milwaukee, Wisconsin.
General American Tank Car Corp., 940 Illinois Merc. Bank Bldg., Chicago, Ill. See page 145.
Greenlee Foundry Co., 662 W. Roosevelt Rd., Chicago, Ill.
Jos. W. Hays Corp., 1042 E. 8th St., Michigan City, Ind.
Ideal Foundry & Machinery Co., Beaver Falls, Pa.
Mesta Machine Co., Pittsburgh, Pa.
North American Car Corp., 327 S. LaSalle St., Chicago, Ill. See page 156.
The Ohio Steel Foundry Co., Springfield, Ohio
Oklahoma Steel Castings Co., N. Peoria Road, Tulsa, Okla.
Philadelphia Steel & Iron Co., 1008 Commercial Trust Bldg., Philadelphia, Pa.
Sivyer Steel Castings Company, Milwaukee, Wis.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

CASTINGS, White Iron

The Brady Conveyors Corp., 20 W. Jackson Blvd., Chicago, Ill.

CAST IRON, Low Heat

Plouff Co., 170 Summer St., Boston, Mass.

CEMENT

Continental Supply Co., St. Louis, Missouri
Lawrence Belting Co., Inc., 113 Chambers St., New York, N. Y.
Texas Portland Cement Co., Dallas, Texas
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

CEMENT, Acid Proof

Arlington Paint & Varnish Co., 1329 Harrison Ave., S. W. Canton, Ohio.
Quigley Furnace Specialties Co., 25 Church St., New York, N. Y.
Rogers Asbestos Co., Houston, Texas.

CEMENT, Asbestos

Acme Asbestos Cov. & Supply Co., 242 N. Elizabeth St., Chicago, Ill.
Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
Arco Co., Cleveland, Ohio
Arlington Paint & Varnish Co., 1329 Harrison Ave., S. W. Canton, Ohio.
Armstrong Cork & Insulation Co., Pittsburgh, Pa.
R. V. Aycock Co., Kansas City, Mo.
Briggs Weaver Machinery Co., Dallas, Texas
Continental Products Co., Euclid, Ohio
The Darcoid Co., 55 Warren St., New York, N. Y.
Ehret Magnesia Mfg. Co., 20 E. Jackson Blvd., Chicago, Ill.
Ehrot Magnesia Mfg. Co., Valley Forge, Pa.
Federal Process Co., Cleveland, Ohio.
Jos. W. Hays Corp., 1042 E. 8th St., Michigan City, Ind.
Johns-Manville Inc., 292 Madison Ave., New York, N. Y.
Keasbey & Mattison Co., Ambler, Pa.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
National Supply Co., Toledo. Ohio
Nitingale & Childs Co., 195 Albany St., Cambridge Sta., Boston, Mass.
Norristown Mangesia & Asbestos Co., Norristown, Pa.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Philip Carey Co., Cincinnati, Ohio
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
Rogers Asbestos Co., Houston, Texas.
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
Standard Asbestos Mfg. Co., 820-22 West Lake St., Chicago, Ill.
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

CEMENT, Boiler Setting

Cook Paint & Varnish Co., North Kansas City, Mo. See page 7.

CEMENT, Fire Brick

Acme Brick Co., Ft. Worth, Texas
Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
American Chimney Corp., 147 Fourth Ave., New York, N. Y.
R. V. Aycock Co., Kansas City, Mo.
Botfield Refractories Co., Swanson & Clymer Sts., Philadelphia, Pa.
Briggs Weaver Machinery Co., Dallas, Texas
Celite Products Co., Van Nuys Bldg., Los Angeles, Calif. See Front Cover.
Crescent Refractories Co., Curwensville, Pa.
Eclipse Fuel Engineering Co., Rockford, Ill.
Eureka Fire Brick Works, 1507 First Nat. Bank Bldg., Pittsburgh, Pa.
A. P. Green Fire Brick Co., Mexico, Mo.
Greene Brothers, Wichita Falls, Texas. See page 61.
Harbison Walker Refractories Co., Thirteenth St., New York, N. Y.
T. K. Harris, Polytechnic Station, Fort Worth, Texas.
McLeod & Henry Co., Troy, N. Y.
Nitingale & Childs Co., 195 Albany St., Cambridge Sta., Boston, Mass.
S. Obermayer Co., 2563 W. 18th St. Chicago. Ill.
Plibrico Jointless Fire Brick Co., 1130 Clay St., Chicago, Ill. See page 9.
Queens Run Refractories Co., Inc., W. Water St., Lock Haven, Pa.
Quigley Furnace Specialties Co., 25 Church St., New York. N. Y.
Refinery Supply Co., Tulsa, Okla. See page 44.
Rogers Asbestos Co., Houston, Texas.
Standard Fuel Engr'g Co., 667-687 Post Ave., So. Detroit, Mich.
Steam Boiler Equipment Co., 1750 Monadnock Block, Chicago, Ill.
Wellsville Fire Brick Co., Wellsville, Mo.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

CEMENT, High Temp.

Acme Brick Co., Ft. Worth, Texas
Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
American Chimney Corp., 147 Fourth Ave., New York, N. Y.
R. V. Aycock Co., Kansas City, Mo.
Banner Rock Products Co., Alexandria, Ind.
The Barber Asphalt Co., 1600 Arch St., Philadelphia, Pa.
Botfield Refractories Co., Swanson & Clymer Sts., Philadelphia, Pa.
Briggs Weaver Machinery Co., Dallas, Texas
Celite Products Co., 1320 South Hope St., Los Angeles, Calif. See Front Cover.
Crescent Refractories Co., Curwensville, Pa.
The Denver Fire Clay Co., P. O. Box 1107 Denver, Colorado
Eclipse Fuel Engineering Co., Rockford, Ill.
Ehrot Magnesia Mfg. Co., Valley Forge, Pa.
Eureka Fire Brick Works, 1507 First Nat. Bank Bldg., Pittsburgh, Pa.
A. P. Green Fire Brick Co., Mexico, Mo.
Greene Brothers, Wichita Falls, Texas. See page 61.
Harbison Walker Refractories Co., Farmers' Bank Bldg., Pittsburgh, Pa.
T. K. Harris, Polytechnic Station, Fort Worth, Texas.
Heine Boiler Co., St. Louis, Mo.
Hofmann Engineering Co., 557-9 W. Quincy St., Chicago, Ill.
Johns-Manville Inc., 292 Madison Ave., New York, N. Y.
Maintenance Eng. Corp., 1802 Conti St., Houston, Texas. See page 150.
McLeod & Henry Co., Troy, N. Y.
National Supply Co., Toledo. Ohio
Nitingale & Childs Co., 195 Albany St., Cambridge Sta., Boston, Mass.
S. Obermayer Co., 2563 W. 18th St. Chicago, Ill.
Philip Carey Co., Cincinnati, Ohio
Pitts & Kitts Mfg. & Supply Co., 91 7th Ave., New York, N. Y.
Plibrico Jointless Fire Brick Co., 1130 Clay St., Chicago, Ill. See page 9.
Queens Run Refractories Co., Inc., W. Water St., Lock Haven, Pa.
Quigley Furnace Specialties Co., 25 Church St., New York. N. Y.
Refinery Supply Co., Tulsa, Okla. See page 44.
Rogers Asbestos Co., Houston. Texas.
Standard Fuel Engr'g Co., 667-687 Post Ave., So. Detroit, Mich.
Steam Boiler Equipment Co., 1750 Monadnock Block, Chicago, Ill.
Wellsville Fire Brick Co., Wellsville, Mo.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

CEMENT, Leather Belting

Briggs Weaver Machinery Co., Dallas, Texas
Chicago Belting Co., 125 N. Green, Chicago, Ill.
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
The Eagle Counter & Leather Co., 414 E. Eighth St., Cincinnati, O.
Hudson Belting Co., 1-3 Easton Place, Worcester, Mass.
Edward R. Ladew Co., 29 Murray St., New York, N Y.
Lawrence Belting Co., Inc., 113 Chambers St., New York, N. Y.
McCauley Belting Co., 412-430 Orleans St., Chicago, Ill.
Milwaukee Leather Belting Co., 352 E. Water St., Milwaukee. Wis.
Missouri Belting Co., 1021-1029 S. Grand Ave., St. Louis, Mo.
National Supply Co., Toledo. Ohio
The N. Palmer Belting Co., Bridgeport, Conn.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Chas. A. Schieren Co., 77 Ferry St. New York, N. Y.
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
Texas Belting Co., Houston, Texas.
J. S. Turner Mfg. Co., 133 Middle St., P. O. Box 1072, Lowell, Mass.
Union Belt Co., 66 Troy St., Fall River, Mass.
Union Iron Works, Selma, Ala.
Warren Belting Co., 33 Artic St., Worcester, Mass.
Western Rawhide & Belting Co., 901-35 Winnebago St., Milwaukee, Wis.
I. B. Williams & Sons, 9 Orchard St., Dover, N. H.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

CEMENT, Magnesia

Ehrot Magnesia Mfg. Co., Valley Forge, Pa.

CEMENTS, Refractory

Laclede-Christy, St. Louis, Mo.

CEMENT, Roofing

Tnemec Paint & Oil Co., 3122 Roanoke Road, Kansas City, Mo.

CEMENT, Rubber

Diamond Rubber Co., Inc., Akron, Ohio.
La Favorite Rubber Mfg. Co., Wagaraw Rd., Hawthorne, N. J.

CEMENT, Tank Repair

Federal Process Co., Cleveland, Ohio.

CENTRIFUGES

Frank S. Betz Co., Hammond, Ind.
Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
Continental Supply Co., St. Louis, Missouri
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
De Laval Separator Co., 165 Broadway, New York, N. Y.
Fort Worth Laboratories, 828½ Monroe St., Ft. Worth, Texas. See page 158.
The Emil Greiner Co,, 55 Fulton St., New York City
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
National Supply Co., Toledo, Ohio
Refinery Supply Co., Tulsa, Okla. See page 44.
The Sharples Specialty Co., 23rd and Westmoreland Sts., Philadelphia, Pa.
C. J. Tagliabue Mfg. Co., 18 33rd St., Brooklyn, N. Y. See page 49.
Arthur H. Thomas Co., W. Washington Square, Philadelphia, Pa.
Tolhurst Machine Works, Troy, New York.
Williams, Brown & Earle, 918 Chestnut St., Philadelphia, Pa. See page 149
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

CHAINS

Briggs Weaver Machinery Co., Dallas, Texas
Colburn Gear & Mfg. Co., 98 Holmes St., Norfolk Downs, Mass.
Continental Supply Co., St. Louis, Missouri
Diamond Chain & Mfg. Co., 502 Kentucky Ave., Indianapolis, Ind.
F. W. Gartner Co., Houston, Texas.
Jeffrey Mfg. Co., 904-99 No. Fourth St., Columbus, Ohio.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Philadelphia Steel & Iron Co., 1008 Commercial Trust Bldg., Philadelphia, Pa.
Joseph T. Ryerson & Sons, 2558 W. 16th St., Chicago, Ill.
Sculley Steel & Iron Co., Chicago, Ill.
U. S. Chain & Forging Co., Union Trust Bldg., Pittsburgh. Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

CHAINS, Transmission

Morse Chain Co., Ithaca, N. Y.

CHARCOAL, Gasoline Plant

Gasoline Recovery Corp., Peoples Bank Bldg., Charleston, W. Va.

CHILLERS, Distillate

Henry Vogt Machine Co., Louisville, Ky. See page 5.

CHIMNEYS, Concrete
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.

CHISEL BLANKS
May Machinery Co., Second National Bank Bldg., Houston, Tex.

CIRCUIT CLOSERS, Electrical and Mechanical
Central Automatic Sprinkler Co., 5145 Delancey St., Philadelphia, Pa.

CLAMPS, Collar Leak
M. B. Skinner Co., 562 Washington Blvd., Chicago, Ill.

CLAMPS, Hose
Cleveland Flue Cleaner Mfg. Co., 5318 St. Clair Ave., Cleveland, Ohio.

CLAMPS, Pipe
Briggs Weaver Machinery Co., Dallas, Texas
Continental Supply Co., St. Louis, Missouri
Equitable Equipment Co., Inc., New Orleans, La.
McDougall & Potter Co., 141st & Rider Ave., New York, N. Y.
National Supply Co., Toledo, Ohio
F. A. Nusbaum, 125 William St., Lockland, Ohio
Oil Well Supply Co., Pittsburgh, Pa.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Perfection Leak Closing Clamp Mfgs., 125 William St., Lockland, Ohio.
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
M. B. Skinner Co., 562 Washington Blvd., Chicago, Ill.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Walworth Company, 88 Pearl St., Boston, Mass.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

CLAMPS, Pipe Joint
M. B. Skinner Co., 562 Washington Blvd., Chicago, Ill.

CLAMPS, Pipe Line
M. B. Skinner Co., 562 Washington Blvd., Chicago, Ill.

CLARIFIERS, Gasoline
Joe Barlow Distributor, Crodus and Taylor, Dallas, Texas
De Laval Separator Co., 165 Broadway, New York, N. Y.
Hardinge Co., Inc., York, Pa.
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.

CLAY, Bleaching
Joe Barlow Distributor, Crodus and Taylor, Dallas, Texas
Refineries Clay Co., 430 Story Bldg., Los Angeles, Calif.

CLAY, Diaspore
T. K. Harris, Polytechnic Station, Fort Worth, Texas.

CLAY, Fire
Acme Brick Co., Ft. Worth, Texas
American Gas Construction Co., Newton, Iowa
Briggs Weaver Machinery Co., Dallas, Texas
Chicago Retort & Fire Brick Co., 208 S. La Salle St., Chicago, Ill.
Cresent Refractories Co., Curwensville, Pa.
The Denver Fire Clay Co., P. O. Box 1107 Denver, Colorado
Elgin Butler Brick & Tile Co., Austin, Texas
Eureka Fire Brick Works, 1507 First Nat. Bank Bldg., Pittsburgh, Pa.
Evens & Howard Fire Brick Co., 920 Market St., St. Louis, Mo.
A. P. Green Fire Brick Co., Mexico, Mo.
Greene Brothers, Wichita Falls, Texas. See page 61.
Harbison Walker Refractories Co., Farmers' Bank Bldg., Pittsburgh
T. K. Harris, Polytechnic Station, Fort Worth, Texas.
Heine Boiler Co., St. Louis, Mo.
Laclede-Christy, St. Louis, Mo.
Louisville Fire Brick Works, Inc., 455 Louisville Ave., Louisville, Ky.
McLeod & Henry Co., Troy, N. Y.
Queens Run Refractories Co., Inc., W. Water St., Lock Haven, Pa.
Refinery Supply Co., Tulsa, Okla. See page 44.
Standard Fuel Engr'g Co., 667-687 Post Ave., So. Detroit, Mich.
Steam Boiler Equipment Co., 1750 Monadnock Block, Chicago, Ill.
Wellsville Fire Brick Co., Wellsville, Mo.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

CLEANERS, Boiler Tube
Babcock-Wilcox and Goldie-McCulloch, Ltd., Galt, Ontario, Canada
Joe Barlow Distributor, Crodus and Taylor, Dallas, Texas
Briggs Weaver Machinery Co., Dallas, Texas
Cleveland Flue Cleaner Mfg. Co., 5318 St. Clair Ave., Cleveland, O.
Continental Products Co., Euclid, Ohio
Continental Supply Co., St. Louis, Missouri
John Dollinger, Jr., Inc., Box 423, Beaumont, Texas
Eclipse Fuel Engineering Co., Rockford, Ill.
Elliott Company, Jeannette, Pa. See page 101.
General Specialty Co., 61-69 Carroll St., Buffalo, N. Y.
Heine Boiler Co., St. Louis, Mo.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Jarecki Mfg. Co., Erie, Pa.
The Lagonda Mfg. Co., Springfield, Ohio
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
Oil Well Supply Co., Pittsburgh, Pa.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Wm. B. Pierce Co., 45 N. Division St., Buffalo, N. Y.
Plouff Co., 170 Summer St., Boston, Mass.
The Roto Co., 74 Union Place, Hartford, Conn. See page 147.
Joseph T. Ryerson & Sons, 2558 W. 16th St., Chicago, Ill.
The Stanwood Corp., Cincinnati, O.
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
Union Iron Works, Selma, Ala.
Walworth Company, 88 Pearl St., Boston, Mass.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

CLEANERS, Flue
Babcock-Wilcox and Goldie-McCulloch, Ltd, Galt, Ontario, Can.
Joe Barlow Distributor, Crodus and Taylor, Dallas, Texas
Briggs Weaver Machinery Co., Dallas, Texas
Cleveland Flue Cleaner Mfg. Co., 5318 St. Clair Ave., Cleveland, O.
John Dollinger, Jr., Inc., Box 423, Beaumont, Texas
Eclipse Fuel Engineering Co., Rockford, Ill.
Elliott Company, Jeannette, Pa. See page 101.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Paul B. Huyette Co., Inc., 5 South Eighteenth St., Philadelphia, Pa.
Milwaukee Steam Appliance Co., West Allis, Wis.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo. Ohio
Oil Well Supply Co., Pittsburgh, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Perolin Co. of America, 1112 W. 37th St., Chicago, Illinois
Wm. B. Pierce Co., 45 N. Division St., Buffalo, N. Y.
Plouff Co., 170 Summer St., Boston, Mass.
Roberts Steam Specialty Co., 5318 St. Clair Ave., Cleveland, Ohio
The Roto Co., 74 Union Place, Hartford, Conn. See page 147.
Joseph T. Ryerson & Sons, 2558 W. 16th St., Chicago, Ill.
Sculley Iron & Steel Co., Chicago, Ill.
The Stanwood Corp., Cincinnati, O.
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
Union Iron Works, Selma, Ala.
Walworth Company, 88 Pearl St., Boston, Mass.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

CLEANERS, Still Tube
Joe Barlow Distributor, Crodus and Taylor, Dallas, Texas
Briggs Weaver Machinery Co., Dallas, Texas
Eclipse Fuel Engineering Co., Rockford, Ill.
Elliott Company, Jeannette, Pa. See page 101.
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Plouff Co., 170 Summer St., Boston, Mass.
The Roto Co., 74 Union Place, Hartford, Conn. See page 147.
Sculley Steel & Iron Co., Chicago, Ill.

CLOCKS, Engine Room
American Schaeffer & Budenberg Corp., Berry & S. 5th St., Brooklyn, N. Y. See page 153.
Ashton Valve Co., 161 First St., Cambridge, Boston, Mass.
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Greene Brothers, Wichita Falls, Texas. See page 61.
Star Brass Mfg. Co., 53 Oliver St., Boston, Mass.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

CLOCKS, Watchman
Briggs Weaver Machinery Co., Dallas, Texas
Chicago Watchman's Clock Co., 1526 S. Wabash Ave., Chicago, Ill.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Petroleum Supply Co., Houston, Texas
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

CLOTH, Blueprint
Spaulding-Moss Co., 42 Franklin St., Boston, Mass.

CLOTH, Metallic Filter
U. T. Hungerford Brass & Copper Co., 80 Lafayette St., New York, N. Y.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

CLOTH, Tracing
Spaulding-Moss Co., 42 Franklin St., Boston, Mass.

CLOTH, Wire
Briggs Weaver Machinery Co., Dallas, Texas
U. T. Hungerford Brass & Copper Co., 80 Lafayette St., New York, N. Y.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

CLUTCHES.
The Hill Clutch Machine & Foundry Co., Cleveland, Ohio

CLUTCHES, Friction
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
The Bessemer Gas Engine Co., Grove City, Pa. See Inside Back Cover.
Briggs Weaver Machinery Co., Dallas, Texas
A. & F. Brown Co., 79 Barclay St., New York, N. Y.
Continental Supply Co., St. Louis, Missouri
Falls Clutch & Machinery Co., Cuyahoga Falls, Ohio.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Jeffrey Mfg. Co., 904-99 No. Fourth St., Columbus, Ohio.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
Marion Machine, Foundry & Supply Co., Box 685, Marion, Ind.
Oil Well Supply Co., Pittsburgh, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Southern Engine & Pump Co., Houston, Texas
Weller Mfg. Co., 1820 N. Kostnor Ave., Chicago, Ill.
T. B. Wood's Sons Co., Chambersburg, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

CLUTCHES, Reverse
The Bessemer Gas Engine Co., Grove City, Pa. See Inside Back Cover.
Briggs Weaver Machinery Co., Dallas, Texas
A. & F. Brown Co., 79 Barclay St., New York, N. Y.
Continental Supply Co., St. Louis, Missouri
Marion Machine, Foundry & Supply Co., Box 685, Marion, Ind.
Oil Well Supply Co., Pittsburgh, Pa.
Southern Engine & Pump Co., Houston, Texas

COCKS
Barco Mfg. Co., 1801 Winnemac Kansas City, Mo.
H. Belfield Co., 435 N. Broad St., Philadelphia, Pa.
Briggs Weaver Machinery Co., Dallas, Texas
A. W. Cadman Mfg. Co., 2814 Smallman St., Pittsburgh, Pa.
Continental Supply Co., St. Louis, Missouri
Detroit Lubricator Co., 5938 Trumbull Ave., Detroit, Mich.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Judson Governor Co., Rochester, New York.
Lunkenheimer Co., Cincinnati, O. See page 17.
McRea & Roberts Co., 211 Campbell Ave., Detroit, Mich.
Michigan Lubricator Co., 3643 Beaubien St., Detroit, Mich.
National Supply Co., Toledo, Ohio
Oil Well Supply Co., Pittsburgh, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Penberthy Injector Co., 340 Holden Ave., Detroit, Mich.
Plouff Co., 170 Summer St., Boston, Mass.
Wm. Powell Co., Cincinnati, Ohio
Walworth Company, 88 Pearl St., Boston, Mass.
D. T. Williams Valve Co., Spring Grove Ave. & Township St., Cincinnati, Ohio. See page 35.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

COCKS, Air
Allen & Billmyre Co., Inc., Grand Central Palace, New York City, N. Y.
American Lubricator Co., Detroit, Mich.
Barco Mfg. Co., 1801 Winnemac Ave., Chicago, Ill.
Bashlin Co., Warren, Pa.
H. Belfield Co., 435 N. Broad St., Philadelphia, Pa.
Briggs Weaver Machinery Co., Dallas, Texas
Brunner Mfg. Co., Utica, N. Y.
A. W. Cadman Mfg. Co., 2814 Smallman St., Pittsburgh, Pa.
Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
Continental Supply Co., St. Louis, Missouri
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Thos. H. Dallett Co., 165-89 W. Clearfield St., Philadelphia, Pa.
Detroit Lubricator Co., 5938 Trumbull Ave., Detroit, Mich.
Essex Brass Corp., 2000 Franklin St., Detroit, Mich.
Hills-McCanna Co., 2025 Elston Ave., Chicago, Ill.
Homestead Valve Mfg. Co., Inc., Homestead, Pa.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
U. T. Hungerford Brass & Copper Co., 80 Lafayette St., New York, N. Y.
Jarecki Mfg. Co., Erie, Pa.

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The Plant Manager, Chief Engineer and other Operators know they will receive a smooth continual flow of production power from Mechanical Units packed with Garlock Packing. There will be no cessation of operation through Packing Failures. This state of mind is characterized by reliance in the commodity and is summed up as confidence.

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Judson Governor Co., Rochester, New York.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Kelly and Jones Co., Greensburg, Pa. See page 75.
Lunkenheimer Co., Cincinnati, O. See page 17.
Manning Maxwell & Moore, Inc., New York, N. Y.
McDonald Mfg. Co., Dubuque, Ia. See Back Cover.
McRea & Roberts Co., 211 Campbell Ave., Detroit, Mich.
Michigan Lubricator Co., 3643 Beaubien St., Detroit, Mich.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
Ohio Injector Co., S. Main St., Wadsworth, Ohio.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Petroleum Supply Co., Houston, Texas
Plouff Co., 170 Summer St., Boston, Mass.
Wm. Powell Co., Cincinnati, Ohio
John Simmons Co., 104-10 Center St., New York, N. Y.
Standard Fuel Engineering Co., 667-687 Post Ave., South Detroit, Mich.
Union Iron Works, Selma, Ala.
Walworth Company, 88 Pearl St., Boston, Mass.
D. T. Williams Valve Co., Spring Grove Ave. & Township St., Cincinnati, Ohio. See page 35.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

COCKS, Drain

American Lubricator Co., Detroit, Mich.
The Atlas Brass Foundry Co., Columbus, Ohio.
H. Belfield Co., 435 N. Broad St., Philadelphia, Pa.
Briggs Weaver Machinery Co., Dallas, Texas
Detroit Lubricator Co., 5938 Trumbull Ave., Detroit, Mich.
Essex Brass Corp., 2000 Franklin St., Detroit, Mich.
Hills-McCanna Co., 2025 Elston Ave., Chicago, Ill.
Homestead Valve Mfg. Co., Inc., Homestead, Pa.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
U. T. Hungerford Brass & Copper Co., 80 Lafayette St., New York, N. Y.
Judson Governor Co., Rochester, New York.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Lunkenheimer Co., Cincinnati, Ohio. See page 17.
McRea & Roberts Co., 211 Campbell Ave., Detroit, Mich.
Michigan Lubricator Co., 3643 Beaubien St., Detroit, Mich.
National Supply Co., Toledo, Ohio
Peden Iron & Steel Co., Houston, Texas. See page 85.
Plouff Co., 170 Summer St., Boston, Mass.
Wm. Powell Co., Cincinnati, Ohio
Union Iron Works, Selma, Ala.
Walworth Company, 88 Pearl St., Boston, Mass.
D. T. Williams Valve Co., Spring Grove Ave. & Township St., Cincinnati, Ohio. See page 35.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

COCKS, Gas

Geo. D. Roper Corp., Rockford, Ill.

COCKS, Gauge

American Lubricator Co., Detroit, Mich.
H. Belfield Co., 435 N. Broad St., Philadelphia, Pa.
James Bonar & Co., Park Bldg., Pittsburgh, Pa.
Briggs Weaver Machinery Co., Dallas, Texas
A. W. Cadman Mfg. Co., 2814 Smallman St., Pittsburgh, Pa.
Carbondale Machine Co., Carbondale, Pa.
Cleveland Flue Cleaner Mfg. Co., 5318 St. Clair Ave., Cleveland, O.
Continental Supply Co., St. Louis, Missouri
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Defender Automatic Regulator Co., 709 Pine St., St. Louis, Mo.
Detroit Lubricator Co., 5938 Trumbull Ave., Detroit, Mich.
Essex Brass Corp., 2000 Franklin St., Detroit, Mich.
Greene Brothers, Wichita Falls, Texas. See page 61.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
U. T. Hungerford Brass & Copper Co., 80 Lafayette St., New York, N. Y.
Paul B. Huyette Co., Inc., 5 South Eighteenth St., Philadelphia, Pa.
Jarecki Mfg. Co., Erie, Pa.
Jenkins Bros., 80 White St., New York, N. Y.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Kelly and Jones Co., Greensburg, Pa. See page 75.
Lunkenheimer Co., Cincinnati, O. See page 17.
Manning Maxwell & Moore, Inc., New York, N. Y.
McRea & Roberts Co., 211 Campbell Ave., Detroit, Mich.
Michigan Lubricator Co., 3643 Beaubien St., Detroit, Mich.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
Northern Tool Co., Inc., 806 Union St., Utica, N. Y.
Ohio Injector Co., S. Main St., Wadsworth, Ohio.
Oil Well Supply Co., Pittsburgh, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Petroleum Supply Co., Houston, Texas
Pitts & Kitts Mfg. & Supply Co., 91 7th Ave., New York, N. Y.
Plouff Co., 170 Summer St., Boston, Mass.
Wm. Powell Co., Cincinnati, Ohio
Refinery Supply Co., Tulsa, Okla. See page 44.
Roberts Steam Specialty Co., 5318 St. Clair Ave., Cleveland, Ohio
"S-C" Regulator Mfg. Co., Fostoria, Ohio.
John Simmons Co., 104-10 Center St., New York, N. Y.
Smith Separator Company, Tulsa, Oklahoma.
Star Brass Mfg. Co., 53 Oliver St., Boston, Mass.
Union Iron Works, Selma, Ala.
Henry Vogt Machine Co., Louisville, Ky. See page 5.
Walworth Company, 88 Pearl St., Boston, Mass.
William Gauge Co., 543 Fourth Ave., Pittsburgh, Pa.
D. T. Williams Valve Co., Spring Grove Ave. & Township St., Cincinnati, Ohio. See page 35.
Wright Austin Co., 315 W. Woodbridge, Detroit, Mich.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

COCKS, Gland Packed

H. Belfield Co., 435 N. Broad St., Philadelphia, Pa.

COCKS, Hard Lead

United Lead Co., 111 Broadway, New York, N. Y.

COCKS, Indicator

Jas. L. Robertson & Son, 79-80 Murray St., New York, N. Y.

COCKS, Oil

American Lubricator Co., Detroit, Mich.
Atlas Valve Co., 282 South St., Newark, N. J.
Barco Mfg. Co., 1801 Winnemac Ave., Chicago, Ill.
Briggs Weaver Machinery Co., Dallas, Texas
Essex Brass Corp., 2000 Franklin St., Detroit, Mich.
Homestead Valve Mfg. Co., Inc., Homestead, Pa.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Judson Governor Co., Rochester, New York.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Lunkenheimer Co., Cincinnati, O. See page 17.
McRea & Roberts Co., 211 Campbell Ave., Detroit, Mich.
Michigan Lubricator Co., 3643 Beaubien St., Detroit, Mich.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
National Transit Pump & Machine Co., Oil City, Pa.
Oil Well Supply Co., Pittsburgh, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Petroleum Supply Co., Houston, Texas
Plouff Co., 170 Summer St., Boston, Mass.
Wm. Powell Co., Cincinnati, Ohio
John Simmons Co., 104-10 Center St., New York, N. Y.
Walworth Company, 88 Pearl St., Boston, Mass.
D. T. Williams Valve Co., Spring Grove Ave. & Township St., Cincinnati, Ohio. See page 35.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

COCKS, Plug

Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
The Barber Asphalt Co., 1600 Arch St., Philadelphia, Pa.
Barco Mfg. Co., 1801 Winnemac Ave., Chicago, Ill.
H. Belfield Co., 435 N. Broad St., Philadelphia, Pa.
Briggs Weaver Machinery Co., Dallas, Texas
A. W. Cadman Mfg. Co., 2814 Smallman St., Pittsburgh, Pa.
Fairbanks Co., 416-22 Broome St., New York, N. Y.
Homestead Valve Mfg. Co., Inc., Homestead, Pa.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Judson Governor Co., Rochester, N. Y.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Lunkenheimer Co., Cincinnati, O. See page 17.
McRea & Roberts Co., 211 Campbell Ave., Detroit, Mich.
Michigan Lubricator Co., 3643 Beaubien St., Detroit, Mich.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
Joseph Oat & Sons, 232 Quarry St., Philadelphia, Pa.
Oil Well Supply Co., Pittsburgh, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Plouff Co., 170 Summer St., Boston, Mass.
Wm. Powell Co., Cincinnati, Ohio
Union Water Meter Co., Worcester, Mass.
Walworth Company, 88 Pearl St., Boston, Mass.
D. T. Williams Valve Co., Spring Grove Ave. & Township St., Cincinnati, Ohio. See page 35.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

COCKS, Roundway

H. Belfield Co., 435 N. Broad St., Philadelphia, Pa.

COCKS, Steam Stop

American Lubricator Co., Detroit, Mich.
Barco Mfg. Co., 1801 Winnemac Ave., Chicago, Ill.
Briggs Weaver Machinery Co., Dallas, Texas
A. W. Cadman Mfg. Co., 2814 Smallman St., Pittsburgh, Pa.
Homestead Valve Mfg. Co., Inc., Homestead, Pa.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Judson Governor Co., Rochester, New York.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Lunkenheimer Co., Cincinnati, O. See page 17.
McRea & Roberts Co., 211 Campbell Ave., Detroit, Mich.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
Oil Well Supply Co., Pittsburgh, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Plouff Co., 170 Summer St., Boston, Mass.
Wm. Powell Co., Cincinnati, Ohio
John Simmons Co., 104-10 Center St., New York, N. Y.
Union Iron Works, Selma, Ala.
Walworth Company, 88 Pearl St., Boston, Mass.
D. T. Williams Valve Co., Spring Grove Ave. & Township St., Cincinnati, Ohio. See page 35.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

COCKS, Steam Stop, Asbestos Packed

Reading Steel Castings Co., Reading, Pa.

COCKS, Three-Way and Four-Way

H. Belfield Co., 435 N. Broad St., Philadelphia, Pa.

COILS

The Acme Tank Car Co., Coffeyville, Kansas
E. B. Badger & Sons Co., 62-75 Pitts St., Boston, Mass.
Baker Ice Machine Co., 3601 Evans St., Omaha, Nebr.
Briggs Weaver Machinery Co., Dallas, Texas
Carbondale Machine Co., Carbondale, Pa.
Finucane Boiler Works, Houston, Texas.
Harrisburg Pipe & Pipe Bending Co,. Houston, Texas
Kelly and Jones Co., Greensburg, Pa. See page 75.
L. O. Koven & Brother, Inc., 154 Ogden Ave., Jersey City, N.J.
Midwest Piping & Supply Co., Second & Miller Sts., St. Louis, Mo. See page 41.
Milwaukee Steam Appliance Co., West Allis, Wis.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Pipe Bending Co., New Haven, Conn.
National Valve & Mfg. Co., 31st and Liberty, Pittsburgh, Pa.
Joseph Oat & Sons, 232 Quarry St., Philadelphia, Pa.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Pittsburgh Pipe Coil & Bending Co., 61 Bridge St., Etna, Pa.
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
Roessing Mfg. Company, Sharpsburg Station, Pittsburgh, Pa.
Shaw-Kendall Engineering Company, 120-130 S. Superior St., Toledo, Ohio
John Simmons Co., 104-10 Center St., New York, N. Y.
Standard Piping & Fittings Co., 30th and Race Sts., Philadelphia, Pa.
The Superheater Co, 17 E. 42nd St., New York City, N. Y.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
The Vilter Mfg. Co., 936 Milwaukee St., Milwaukee, Wis. See page 161.
Henry Vogt Machine Co., Louisville, Ky. See page 5.
Walworth Company, 88 Pearl St., Boston, Mass.
Whitlock Coil Pipe Co., Hartford, Conn.
York Manufacturing Co., York, Pa. See page 143.

COILS, Copper

Arthur Harris & Co., 212 Curtis St., Chicago, Ill.
Jewell Polar Co., 9 S. Clinton St., Chicago, Ill.

COILS, Lead Lined & Lead Covered

United Lead Co., 111 Broadway, New York, N. Y.

COILS, Oil Cracking

Finucane Boiler Works, Houston, Texas.
L. O. Koven & Brother, Inc., 154 Ogden Ave., Jersey City, N.J.
National Pipe Bending Co., New Haven, Conn.
National Valve & Mfg. Co., 31st and Liberty, Pittsburgh, Pa.
Pittsburgh Pipe Coil & Bending Co., 61 Bridge St., Etna, Pa.
Standard Piping & Fittings Co., 30th and Race Sts., Philadelphia, Pa.
The Superheater Co, 17 E. 42nd St., New York City, N. Y.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Henry Vogt Machine Co., Louisville, Ky. See page 5.
Walworth Company, 88 Pearl St., Boston, Mass.

COLLARS

The Acme Tank Car Co., Coffeyville, Kansas
Briggs Weaver Machinery Co., Dallas, Texas

Falls Clutch & Machinery Co., Cuyahoga Falls, Ohio.
The Hill Clutch Machine & Foundry Co., Cleveland, Ohio
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Jones, W. A., Foundry & Machine Co., 4415 W. Roosevelt Road, Chicago, Illinois
Peden Iron & Steel Co., Houston, Texas. See page 85.
Union Iron Works, Selma, Ala.

COLLARS, Tank Shell

Oil Conservation Engineering Co., Cleveland, Ohio. See page 4.

COLORIMETERS

Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
The Denver Fire Clay Co., P. O. Box 1107 Denver, Colorado
Fort Worth Laboratories, 828½ Monroe St., Ft. Worth, Texas. See page 158.
Greene Brothers, Wichita Falls, Texas. See page 61.
Refinery Supply Co., Tulsa, Okla. See page 44.
C. J. Tagliabue Mfg. Co., 18 33rd St., Brooklyn, N. Y. See page 49.
Arthur H. Thomas Co., W. Washington Square, Philadelphia, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

COLUMNS, Packed

Fort Worth Steel & Machinery Co., Fort Worth, Texas
Peden Iron & Steel Co., Houston, Texas. See page 85.
Winkler and Koch, 429 First National Bank, Wichita, Kansas. See page 109.

COLUMNS, Water

Briggs Weaver Machinery Co., Dallas, Texas
Defender Automatic Regulator Co., 709 Pine St., St. Louis, Mo.
The Dyer Mfg. Co., 155 Brookline St., Cambridge, Mass.
Fort Worth Steel & Machinery Co., Fort Worth, Texas
Heine Boiler Co., St. Louis, Mo.
Hills-McCanna Co., 2025 Elston Ave., Chicago, Ill.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Paul B. Huyette Co., Inc., 5 South Eighteenth St., Philadelphia, Pa.
Kelley & Mueller, Inc., 34 W. Thirteenth St., New York, N. Y.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Lunkenheimer Co., Cincinnati, O. See page 17.
Nason Manufacturing Company, 71 Fulton St., New York. N. Y.
National Supply Co., Toledo, Ohio
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Cal f.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Perolin Co. of America, 1112 W. 37th St., Chicago, Illinois
Pitts & Kitts Mfg. & Supply Co., 91 7th Ave., New York, N. Y.
Plouff Co., 170 Summer St., Boston, Mass.
Wm. Powell Co., Cincinnati, Ohio
Roberts Steam Specialty Co., 5318 St. Clair Ave., Cleveland, Ohio
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
The Stanwood Corp., Cincinnati, O.
Thermal Efficiency Co., 1210 Scarritt Bldg., Kansas City, Mo. See page 113.
Union Iron Works, Selma. Ala.
Walworth Company, 88 Pearl St., Boston, Mass.
William Gauge Co., 543 Fourth Ave., Pittsburgh, Pa.
Wright Austin Co., 315 W. Woodbridge, Detroit, Mich.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

COMPASSES

The C. F. Pease Co., 866 N. Franklin St., Chicago, Ill.

COMPENSATORS, Automatic

Electric Controller & Mfg. Co., 2700 E. Seventy-Ninth St., Cleveland, Ohio.

COMPOUNDS

The Cochrane Corp., 3130 N. 17th St., Philadelphia, Pa.

COMPOUNDS, Boiler

Joe Barlow Distributor, Crodus and Taylor, Dallas, Texas
Briggs Weaver Machinery Co., Dallas, Texas
Continental Products Co., Euclid, Ohio
Continental Supply Co., St. Louis, Missouri
Dearborn Chemical Co., 310 S. Michigan Ave., Chicago, Ill.
Edison Packing & Sales Co., 234 State St., Boston, Mass.
Hawk-Eye Compound Co., Blue Island, Suburb of Chicago, Ill.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
Ocean Shore Iron Works, 550 Eighth St., San Francisco, Cal.f.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Perolin Co. of America, 1112 W. 37th St., Chicago, Illinois
Petroleum Supply Co., Houston, Texas
Plouff Co., 170 Summer St., Boston, Mass.
Union Iron Works, Selma, Ala.
Thos. C. Warley & Co., 211-217 Bainbridge St., Philadelphia, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

COMPOUNDS, Pipe Joints

The Eclipse Paint & Mfg. Co., Cleveland, Ohio.

COMPOUNDS, Rust Inhibitive

The Barber Asphalt Co., 1600 Arch St., Philadelphia, Pa.
Joe Barlow Distributor, Crodus and Taylor, Dallas, Texas
The Dampney Co. of America, 50-60 Business St., Boston, Mass.
Dearborn Chemical Co., 310 S. Michigan Ave., Chicago, Ill.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
Oil Well Supply Co., Pittsburgh, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Perolin Co. of America, 1112 W. 37th St., Chicago, Illinois
Petroleum Supply Co., Houston, Texas
St. Louis Surfacer & Paint Co., 5506 Hazel Ave., St. Louis, Mo.
Truscon Laboratories, Carriff & G. T. R.R., Detroit, Mich.
Thos. C. Warley & Co., 211-217 Bainbridge St., Philadelphia, Pa.

COMPRESSORS

Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
Allen & Billmyre Co., Inc., Grand Central Palace, New York City, N. Y.
American Steam Pump Co., Battle Creek, Mich.
Audiffren Refrigerating Machine Co., 285 Madison Ave., New York, N. Y.
Baker Ice Machine Co., 3601 Evans St., Omaha, Nebr.
Beach-Russ Co., 30 Church St., New York, N. Y.
The Bessemer Gas Engine Co., Grove City, Pa. See inside back cover.
Briggs Weaver Machinery Co., Dallas, Texas
Charter Gas Engine Co., Sterling, Illinois.
De Laval Steam Turbine Co., Trenton, N. J. See Page 123.
Detroit Lubricator Co., 5938 Trumbull Ave., Detroit, Mich.
Gardner-Governor Co., Quincy, Ill.
F. W. Gartner Co., Houston, Texas.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Lamert & Mann Co., Wood & Waknut Sts., Chicago, Ill.
Lucas Pump & Tool Co., 427 Valley St., Dayton, Ohio
National Supply Co., Toledo, Ohio
Oil Well Supply Co., Pittsburgh, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Southern Engine & Pump Co., Houston, Texas
Superior Gas Engine Co., Springfield, Ohio
Tennant Co., Union National Bank Bldg., Houston, Texas.
Western Gas Construction Co., Fort Wayne, Ind.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

COMPRESSORS, Air

Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
Allen & Billmyre Co., Inc., Grand Central Palace, New York, N. Y.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
American Steam Pump Co., Battle Creek, Mich.
Baker Ice Machine Co., 3601 Evans St., Omaha, Nebr.
Beach-Russ Co., 30 Church St., New York, N. Y.
The Bessemer Gas Engine Co., Grove City, Pa. See inside back cover.
Binks Spray Equipment Co., 3114 Carroll Ave., Chicago, Ill.
Brazelton, Wessendorff & Nelms, Houston, Texas
Briggs Weaver Machinery Co., Dallas, Texas
Brunner Mfg. Co., Utica, N. Y.
Butler Mfg. Co., 1124 Grand Ave., Kansas City, Mo.
Charter Gas Engine Co., Sterling, Illinois.
Chicago Pneumatic Tool Co., 6 E. 44th St., New York, N. Y.
Continental Supply Co., St. Louis, Missouri
Cooper, C. & G., Co., Mt. Vernon, Ohio. See pages 30-31.
Crowell Mfg. Co., 315 Franklin Ave., Brooklyn, N. Y.
Thos. H. Dallett Co., 165-89 W. Clearfield St., Philadelphia, Pa.
De Laval Steam Turbine Co., Trenton, N. J. See Page 123.
De Vilbiss Mfg. Co., Toledo, Ohio
Detroit Lubricator Co., 5938 Trumbull Ave., Detroit, Mich.
J. P. Devine Co., 1380 Clinton, Buffalo, N. Y.
Domestic Engine & Pump Co., Shippensburg, Pa.
Equitable Equipment Co., Inc., New Orleans, La.
R. B. Everett Co., Houston, Texas
Gardner-Governor Co., Quincy, Ill.
F. W. Gartner Co., Houston, Texas.
General Electric Co., Schenectady, New York
Hardie-Tynes Mfg. Co., Eighth Ave., & Twenty-Eighth St., Birmingham, Ala.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Indiana Air Pump Co., 816 Indiana Pythian Bldg., Indianapolis, Indiana
Ingersoll-Rand Co., 11 Broadway, New York, N. Y.
Lamert & Mann Co., Wood & Waknut Sts., Chicago, Ill.
Lucas Pump & Tool Co., 427 Valley St., Dayton, Ohio
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
May Machinery Co., Second National Bank Bldg., Houston, Tex.
Mesta Machine Co., Pittsburgh, Pa.
Miller Improved Gas Engine Co., Springfield, Ohio.
National Supply Co., Toledo, Ohio
Nordberg Mfg. Co., Milwaukee, Wis.
Oil Well Supply Co., Pittsburgh, Pa.
H. A. Paine Co., 419-20 Cotton Exchange Bldg., Houston, Texas.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Powers Regulator Co., 2720 Greenview Ave., Chicago, Ill.
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
Joseph T. Ryerson & Sons, 2558 W. 16th St., Chicago, Ill.
Schramm, Inc., West Chester, Pa.
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
Southern Engine & Pump Co., Houston, Texas
Sullivan Machinery Co., 122 S. Michigan Ave., Chicago, Ill.
Superior Gas Engine Co., Springfield, Ohio
C. J. Tagliabue Mfg. Co., 18 33rd St., Brooklyn N. Y., See page 49.
Tennant Co., Union National Bank Bldg., Houston, Texas.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Western Gas Construction Co., Fort Wayne, Ind.
Western Machinery Co., Los Angeles, Calif.

COMPRESSORS, Air, Portable

Sullivan Machinery Co., 122 S. Michigan Ave., Chicago, Ill.

COMPRESSORS, Ammonia

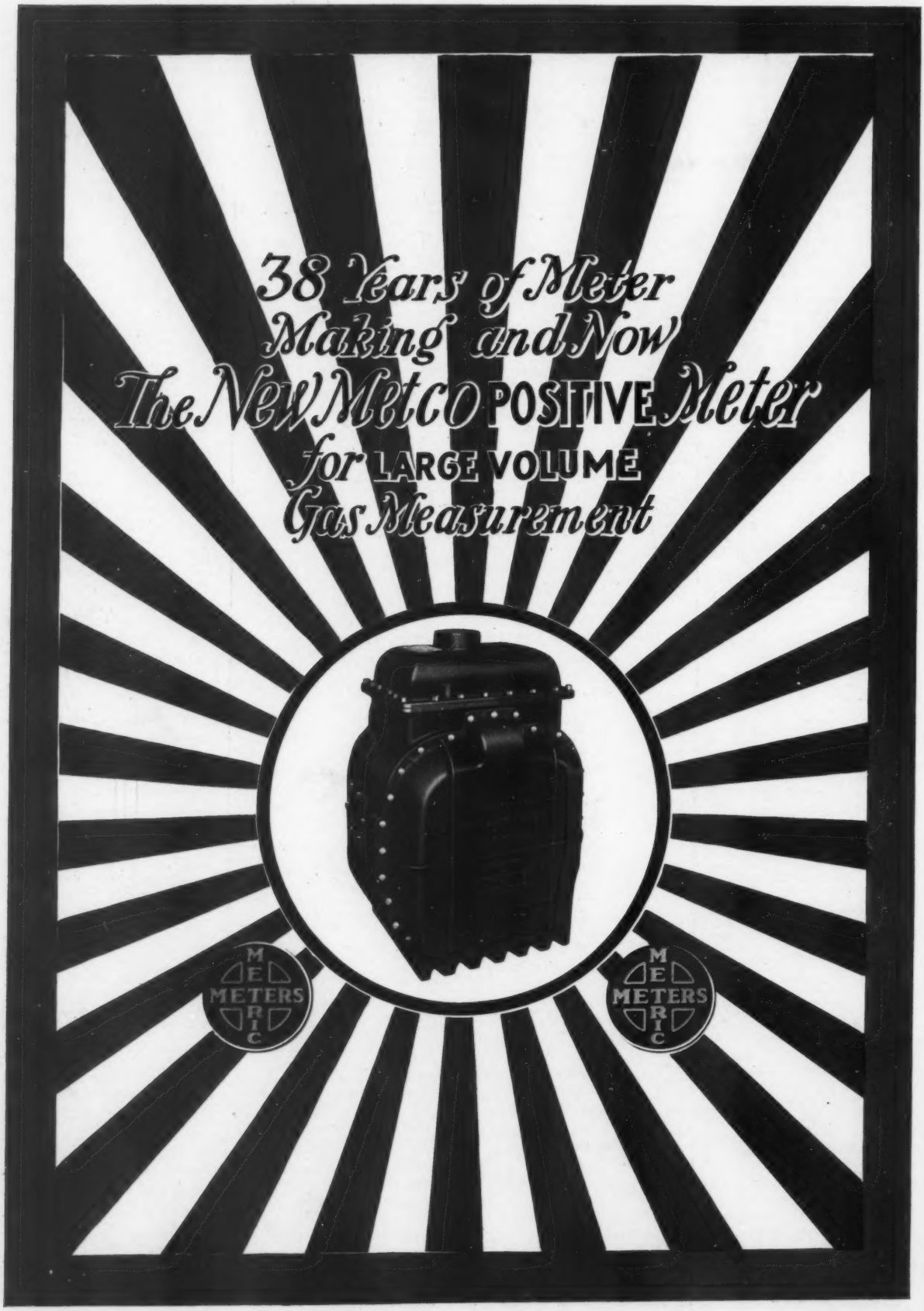
Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
American Engineering Co., Philadelphia, Pa.
Armstrong Machinery Co., 3201-19 E. Riverside, Spokane, Wash.
Arctic Ice Machine Co., Canton, Ohio
Baker Ice Machine Co., 3601 Evans St., Omaha, Nebr.
Bayley Mfg. Co., 73 Greenbush St., Milwaukee, Wis.
Beach-Russ Co., 30 Church St., New York, N. Y.
Carbondale Machine Co., Carbondale, Pa.
Cooper, C. & G., Co., Mt. Vernon, Ohio. See pages 30-31.
Crowell Mfg. Co., 315 Franklin Ave Brooklyn, N. Y.
Gardner-Governor Co., Quincy, Ill.
Hardie-Tynes Mfg. Co., Eighth Ave., & Twenty-Eighth St., Birmingham, Ala.
Ingersoll-Rand Co., 11 Broadway, New York, N. Y.
Milwaukee Steam Appliance Co., West Allis, Wis.
H. A. Paine Co., 419-20 Cotton Exchange Bldg., Houston, Texas.
Southern Engine & Pump Co., Houston, Texas
Tennant Co., Union National Bank Bldg., Houston, Texas.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
The Vilter Mfg. Co., 936 Milwaukee St., Milwaukee, Wis. See page 161.
Henry Vogt Machine Co., Louisville, Ky. See page 5.
York Manufacturing Co., York, Pa. See page 143.

COMPRESSORS, Centrifugal

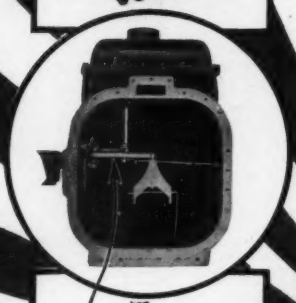
Allen & Billmyre Co., Inc., Grand Central Palace, New York City, N. Y.
De Laval Steam Turbine Co., Trenton, N. J. See page 123.
Gardner-Governor Co., Quincy, Ill.
Hardie-Tynes Mfg. Co., Eighth Ave., & Twenty-Eighth St., Birmingham, Ala.
Lamert & Mann Co., Wood & Waknut Sts., Chicago, Ill.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
H. A. Paine Co., 419-20 Cotton Exchange Bldg., Houston, Texas.
Southern Engine & Pump Co., Houston, Texas
Spencer Turbine Company, Hartford, Conn.
Tennant Co., Union National Bank Bldg., Houston, Texas.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

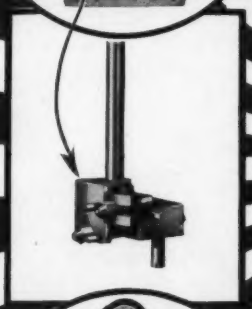
COMPRESSORS, Gas

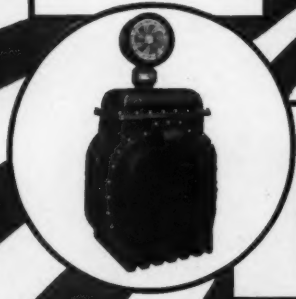
Allen & Billmyre Co., Inc., Grand Central Palace, New York City, N. Y.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
American Gas Construction Co., Newton, Iowa
Arctic Ice Machine Co., Canton, Ohio
Beach-Russ Co., 30 Church St., New York, N. Y.
The Bessemer Gas Engine Co., Grove City, Pa. See inside back cover.
Briggs Weaver Machinery Co., Dallas, Texas
Burdett Mfg. Co., 309 St. Johns Court, Chicago, Ill.
Chicago Pneumatic Tool Co., 6 E. 44th St., New York, N. Y.
Cooper, C. & G., Co., Mt. Vernon, Ohio, See pages 30-31.
Crowell Mfg. Co., 315 Franklin Ave., Brooklyn, N. Y.
De Laval Steam Turgine Co., Trenton, N. J. See page 123.
Equitable Equipment Co., Inc., New Orleans, La.
Gardner-Governor Co., Quincy, Ill.
Hardie-Tynes Mfg. Co., Eighth Ave., & Twenty-Eighth St., Birmingham, Ala.
Hope Engineering & Supply Co., Mount Vernon, Ohio
Indiana Air Pump Co., 816 Indiana Pythian Bldg., Indianapolis, Indiana
Ingersoll-Rand Co., 11 Broadway, New York, N. Y.
Kinney Mfg. Co., 3529-3541 Washington St., Boston, Mass.
Lamert & Mann Co., Wood & Waknut Sts., Chicago, Ill.
May Machinery Co., Second National Bank Bldg., Houston, Tex.
Mesta Machine Co., Pittsburgh, Pa.
Miller Improved Gas Engine Co., Springfield, Ohio.
National Transit Pump & Machine Co., Oil City, Pa.

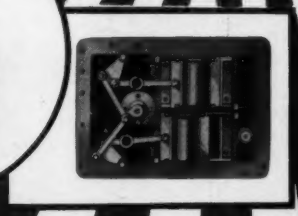

38 Years of Meter
Making and Now
The New Metco POSITIVE Meter
for LARGE VOLUME
Gas Measurement
METERS
METERS

Details of The New Metco POSITIVE LARGE VOLUME Gas Meter









The new Metco Meter is designed to take care of Industrial Installations where a large capacity meter is required. The meters are small in size, light in weight and easy to operate and adjust. The links, arms and all bearings are made of Phosphor Bronze which is one of the best slow speed bearing materials known.

Metco Meters are designed and rated as called for by American Gas Association Specifications; the 2500-foot passing 2500 cu. ft. per hour at a 2″ initial pressure with ½″ differential rated at .6 gravity gas; the 4000-foot passing 4000 cu. ft. per hour under like conditions.

These meters are built to take overload and run smoothly without wear at a differential of 2″ water. Under these conditions the 2500-foot will pass 4000 cu. ft. per hour and the 4000-foot will pass 7500 cu. ft. per hour.

A brief Booklet, describing the new Metco meter will be gladly sent upon request.

METRIC METAL WORKS
of the American Meter Company-Inc.
- ERIE - PENNSYLVANIA - U-S-A -

Nordberg Mfg. Co., Milwaukee, Wis.
Oil Well Supply Co., Pittsburgh, Pa.
H. A. Paine Co., 419-20 Cotton Exchange Bldg., Houston, Texas.
Pattin Bros. Co., Marietta, Ohio.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Superior Gas Engine Co., Springfield, Ohio
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Western Gas Construction Co., Fort Wayne, Ind.

COMPRESSORS, Gasoline Extraction

Arctic Ice Machine Co., Canton, Ohio
The Bessemer Gas Engine Co., Grove City, Pa. See inside back cover.
Chicago Pneumatic Tool Co., 6 E. 44th St., New York, N. Y.
Clark Bros. Co., Olean, N. L. See pages 38-39.
Cooper, C. & G., Co., Mt. Vernon, Ohio. See pages 30-31.
Crowell Mfg. Co., 315 Franklin Ave., Brooklyn, N. Y.
De Laval Steam Turbine Co., Trenton, N. J. See page 123.
Gardner-Governor Co., Quincy, Ill.
Hardie-Tynes Mfg. Co., Eighth Ave., & Twenty-Eighth St., Birmingham, Ala.
Indiana Air Pump Co., 816 Indiana Pythian Bldg., Indianapolis, Indiana
Ingersoll-Rand Co., 11 Broadway, New York, N. Y.
Lamert & Mann Co., Wood & Waknut Sts., Chicago, Ill.
May Machinery Co., Second National Bank Bldg., Houston, Tex.
Miller Improved Gas Engine Co., Springfield, Ohio.
Oil Well Supply Co., Pittsburgh, Pa.
H. A. Paine Co., 419-20 Cotton Exchange Bldg., Houston, Texas.
Sullivan Machinery Co., 122 S Michigan Ave., Chicago, Ill.
Superior Gas Engine Co., Springfield, Ohio

COMPRESSORS, Rotary

Crowell Mfg. Co., 315 Franklin Ave., Brooklyn, N. Y.

CONCRETE, Mixers

The Lakewood Engineering Co., Cleveland, Ohio

CONDENSERS

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
American Gas Construction Co., Newton, Iowa
American Steam Pump Co., Battle Creek, Mich.
Arctic Ice Machine Co., Canton, Ohio
Babcock-Wilcox and Goldie-McCulloch, Ltd., Galt, Ontario, Canada
Baker Ice Machine Co., 3601 Evans St., Omaha, Nebr.
Beach-Russ Co., 30 Church St., New York, N. Y.
Biggs Boiler Works Co., Case Ave. and Newton St., Akron, Ohio
C. F. Braun & Co., Alhambra, Cal. See pages 78-79.
Buffalo Steam Pump Co., 490 Broadway, Buffalo, N. Y.
Carbondale Machine Co., Carbondale, Pa.
Chicago Pneumatic Tool Co., 6 E. 44th St., New York, N. Y.
Columbian Steel Tank Co., 1401-1631 W. Twelfth St., Kansas City, Mo.
Croll-Reynolds Eng'rg. Co., Inc., 95 Liberty St., New York, N. Y.
Cross Engineering Co., 700 Baltimore Ave., Kansas City, Mo. See page 129.
J. P. Devine Co., 1380 Clinton, Buffalo, N. Y.
Elliott Company, Jeannette, Pa. See page 101.
Finucane Boiler Works, Houston, Texas.
Fort Worth Steel & Machinery Co., Fort Worth, Texas
Dean E. Foster, New Wright Bldg., Tulsa, Okla.
Gasoline Recovery Co., Peoples Bank Bldg., Charleston, W. Va.
Griscom-Russell Co., 285 Madison Ave., New York, N. Y. See page 133.
Hardie-Tynes Mfg. Co., Eighth Ave., & Twenty-Eighth St., Birmingham, Ala.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Illinois Glass Co., Alton, Ill.
Ingersoll-Rand Co., 11 Broadway, New York, N. Y.
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.
John H. McGown Co., 910 4th Natl. Bk. Bldg., Cincinnati, Ohio
Mesta Machine Co., Pittsburgh, Pa.
Milwaukee Steam Appliance Co., West Allis, Wis.
New York Engineering Co., 2 Rector St., New York, N. Y.
H. A. Paine Co., 419-20 Cotton Exchange Bldg., Houston, Texas.
Petroleum Iron Works, Sharon, Pa.
Riter-Conley Co., Oliver Bldg., Pittsburgh, Pa.
Ross Heater & Mfg. Co., Inc., Buffalo, N. Y.
Schutte & Koerting Co., 1165 Thompson St., Philadelphia, Pa. See page 149.
Southwestern Engineering Co., Hollingsworth Bldg., Los Angeles, Cal. See page 109.
Tennant Co., Union National Bank Bldg., Houston, Texas.
Titusville Iron Works, Titusville, Pa.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Western Gas Construction Co., Fort Wayne, Ind.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
Wheeler Condenser & Engineering Corp., 149 Broadway, N. Y., N.Y
Whitlock Coil Pipe Co., Hartford, Conn.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.
York Manufacturing Co., York, Pa. See page 143.

CONDENSERS, Ammonia

Armstrong Machinery Co., 3201-19 E. Riverside, Spokane, Wash.

CONDENSERS, Charcoal Gasoline Plant

Gasoline Recovery Co., Peoples Bank Bldg., Charleston, W. Va.

CONDUITS, Electric

Aluminum Co. of America, 2400 Oliver Bldg., Pittsburgh, Pa.
American Tube & Pipe Bending Co., Niles, Ohio
General Electric Co., Schenectady, New York
Johns-Manville Inc., 292 Madison Ave., New York, N. Y.
Langstadt-Meyer Co., Appleton, Wis.
The Pyle-National Co., Chicago, Ill.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.
The Youngstown Sheet & Tube Co., Youngstown, Ohio

CONDUITS, Underground

American District Steam Co., N. Tonawanda, N. Y.
General Electric Co., Schenectady, New York
Johns-Manville Inc., 292 Madison Ave., New York, N. Y.
Langstadt-Meyer Co., Appleton, Wis.
Penn Metal Co., 675 Concord Ave., Cambridge, Mass.

CONSISTOMETERS, Grease Testing

Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Greene Brothers, Wichita Falls, Texas. See page 61.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

CONTACTORS, Belt

T. B. Wood's Sons Co., Chambersburg, Pa.

CONTROLS, Automatic Refrigerating Machinery

Refrigerating Specialties Co., 714 S. Sacramento Blvd., Chicago, Ill.

CONTROL, Electrical

Brown Instrument Co., 4537 Wayne Ave., Philadelphia, Pa.
Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Cutler-Hammer Mfg. Co., Milwaukee, Wis.
Electric Controller & Mfg. Co., 2700 E. Seventy-Ninth St., Cleveland, Ohio.
Electric Tachometer Corp., 310 N. Eleventh St., Philadelphia, Pa.
Greene Brothers, Wichita Falls, Texas. See page 61.
Houston Armature Works, Houston, Texas
Maintenance Co., Inc., 449-53 W. Forty-Second St., N. Y., N. Y.
Refinery Supply Co., Tulsa, Okla. See page 44.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

CONTROLLERS, Humidity

Julien P. Friez & Sons, Baltimore St. & Central Ave., Baltimore, Md.

CONTROLLERS, Liquid Level

American Schaeffer & Budenberg Corp., Berry & S. 5th St., Brooklyn, N. Y. See page 153.
Briggs Weaver Machinery Co., Dallas, Texas
Brown Instrument Co., 4537 Wayne Ave., Philadelphia, Pa.
The Chaplin-Fulton Co., 28 Penn Ave., Pittsburgh, Pa.
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Electric Tachometer Corp., 310 N. Eleventh St., Philadelphia, Pa.
Fisher Governor Co., Marshalltown, Iowa. See page 81.
Greene Brothers, Wichita Falls, Texas. See page 61.
Griscom-Russell Co., 285 Madison Ave., New York, N. Y. See page 133.
Maintenance Eng. Corp., 1802 Conit St., Houston, Texas. See page 150.
McAlear Mfg. Co., 1901-07 S. Western Ave., Chicago, Ill.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
Refinery Supply Co., Tulsa, Okla. See page 44.
Republic Flow Meters Co., 2236 Diversey Parkway, Chicago, Ill.
Simplex Valve & Meter Co., 2005 S. 68th St., Philadelphia, Pa.
Stickle Steam Specialties Co., Indianapolis, Ind.
C. J. Tagliabue Mfg. Co., 18 33rd St., Brooklyn, N. Y. See page 49.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

CONTROLLERS, Temperature

American Gas Furnace Co., Lafayette, Spring and Elizabeth St., Elizabeth, N. J.
American Schaeffer & Budenberg Corp. Berry & S. 5th St., Brooklyn, N. Y. See page 153.
Baker Ice Machine Co., 3601 Evans St., Omaha, Nebr.
Briggs Weaver Machinery Co., Dallas, Texas
The Bristol Co., Waterbury, Conn.
Brown Instrument Co., 4537 Wayne Ave., Philadelphia, Pa.
Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
The Denver Fire Clay Co., P. O. Box 1107 Denver, Colorado
Charles Englehard, Inc., 30 Church St., New York, N. Y.
Fort Worth Laboratories, 828½ Monroe St., Fort Worth, Texas. See page 158.
Greene Brothers, Wichita Falls, Texas. See page 61.
Leeds & Northrup Company, Philadelphia, Pa. See page 3.
F. J. Low Co., Inc., 15 W. 44th St., New York, N. Y.
Maintenance Eng. Corp., 1802 Conti St., Houston, Texas. See page 150.
Powers Regulator Co., 2720 Greenview Ave., Chicago, Ill.
Refinery Supply Co., Tulsa, Okla. See page 44.
Refrigerating Specialties Co., 714 S. Sacramento Blvd., Chicago, Ill.
Sweet & Doyle Foundry & Machine Co., Green Island, Troy, N. Y. See page 45.
C. J. Tagliabue Mfg. Co., 18 33rd St., Brooklyn, N. Y. See page 49.
Wilson Maeulen Co., 383 Concord Ave., New York, N. Y.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

CONTROLLERS, Wax Sweating

C. J. Tagliabue Mfg. Co., 18 33rd St., Brooklyn, N. Y. See page 49.

CONVEYORS

The Brady Conveyors Corp., 20 W. Jackson Blvd., Chicago, Ill.
Weller Mfg. Co., 1820 N. Kostnor Ave., Chicago, Ill.

CONVEYORS, Ash

Allen & Billmyre Co., Inc., Grand Central Palace, New York City, N. Y.
Babcock-Wilcox and Goldie-McCulloch, Ltd., Galt, Ontario, Canada
The Brady Conveyors Corp., 20 W. Jackson Blvd., Chicago, Ill.
Chain Belt Co., Milwaukee, Wis.
Frederick Iron & Steel Co., Frederick, Md.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Jeffrey Mfg. Co., 904-99 No. Fourth St., Columbus, Ohio.
The Lakewood Engineering Co., Cleveland, Ohio
National Supply Co., Toledo, Ohio
Union Engineering Co., Cleveland, Ohio.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Weller Mfg. Co., 1820 N. Kostnor Ave., Chicago, Ill.
Western Gas Construction Co., Fort Wayne, Ind.

CONVEYORS, Gravity

The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.

CONVEYORS, Pneumatic

Allen & Billmyre Co., Inc., Grand Central Palace, New York City, N. Y.
Bayley Mfg. Co., 73 Greenbush St., Milwaukee, Wis.
The Brady Conveyors Corp., 20 W. Jackson Blvd., Chicago, Ill.
M. C. Carlisle & Co., Inc., 575 Albany St., Boston (18), Mass.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

CONVEYORS, Pneumatic Coke

The Brady Conveyors Corp., 20 W. Jackson Blvd., Chicago, Ill.

CONVEYORS, Rotary

The Brady Conveyors Corp., 20 W. Jackson Blvd., Chicago, Ill.
Briggs Weaver Machinery Co., Dallas, Texas
Union Engineering Co., Cleveland, Ohio.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Weimar Engineering Works, Westmoreland & Jasper Sts., Philadelphia, Pa.

COOLERS

Arctic Ice Machine Co., Canton, Ohio
Audiffren Refrigerating Machine Co., 285 Madison Ave., New York, N. Y.
Baker Ice Machine Co., 3601 Evans St., Omaha, Nebr.
C. F. Braun & Co., Alhambra, Cal. See pages 78-79.
Carbondale Machine Co., Carbondale, Pa.
Croll-Reynolds Eng'rg. Co., Inc., 95 Liberty St., New York, N. Y.
J. P. Devine Co., 1380 Clinton, Buffalo, N. Y.
Dean E. Foster, New Wright Bldg., Tulsa, Okla.
Griscom-Russell Co., 285 Madison Ave., New York, N. Y. See page 133.
Hardinge Co., Inc., York, Pa.
New York Engineering Co., 2 Rector St., New York, N. Y.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Petroleum Iron Works, Sharon, Pa.
Ross Heater & Mfg. Co., Inc., Buffalo, N. Y.
Schutte & Koerting Co., 1165 Thompson St., Philadelphia, Pa. See page 149.
Sims Co., Erie, Pa.
Sowers Mfg. Co., 1294 Niagara St., Buffalo, N. Y.
Tennant Co., Union National Bank Bldg., Houston, Texas.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.

Western Gas Construction Co., Fort Wayne, Ind.
Whitlock Coil Pipe Co., Hartford, Conn.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.
York Manufacturing Co., York, Pa. See page 143.

COOLERS, Gas

Arctic Ice Machine Co., Canton, Ohio
The Bessemer Gas Engine Co., Grove City, Pa. See inside back cover.
C. F. Braun & Co., Alhambra, Cal. See pages 78-79.
Croll-Reynolds Eng'rg. Co., Inc., 95 Liberty St., New York, N. Y.
Cross Engineering Co., 700 Baltimore Ave., Kansas City, Mo. See page 129.
J. P. Devine Co., 1380 Clinton, Buffalo, N. Y.
Dean E. Foster, New Wright Bldg., Tulsa, Okla.
Griscom-Russell Co., 285 Madison Ave., New York, N. Y. See page 133.
McAleenan Bros. Co., Twenty-fifth and Railroad, Pittsburgh, Pa.
New York Engineering Co., 2 Rector St., New York, N. Y.
Oil Well Supply Co., Pittsburgh, Pa.
Ross Heater & Mfg. Co., Inc., Buffalo, N. Y.
Schutte & Koerting Co., 1165 Thompson St., Philadelphia, Pa. See page 149.
Southwestern Engineering Co., Hollingsworth Bldg., Los Angeles, Cal. See page 109.
Tennant Co., Union National Bank Bldg., Houston, Texas.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Western Gas Construction Co., Fort Wayne, Ind.

COOLERS, Lead Lined

United Lead Co., 111 Broadway, New York, N. Y.

COOLERS, Water

Jewell Polar Co., 9 S. Clinton St., Chicago, Ill.

COOLING PONDS

Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
E. B. Badger & Sons Co., 63-75 Pitts St., Boston, Mass.
Edwin Burhorn Co., 25 West Broadway, New York, N. Y.
Arthur G. McKee & Co., 2422 Euclid Ave., Cleveland, Ohio
National Supply Co., Toledo, Ohio
Schutte & Koerting Co., 1165 Thompson St., Philadelphia, Pa. See page 149.
Tennant Co., Union National Bank Bldg., Houston, Texas.
The Widdell Engineering Co., 512 American Bk. Bldg., Kansas City, Mo.

COPPER AND BRASS WORK, to Special Specifications

Jewell Polar Co., 9 S. Clinton St., Chicago, Ill.

COPPER GOODS

American Brass Co., Waterbury, Conn.
Bridgeport Brass Co., Bridgeport, Conn.
J. P. Devine Co., 1380 Clinton, Buffalo, N. Y.
Greene Brothers, Wichita Falls, Texas. See page 61.
Arthur Harris & Co., 212 Curtis St., Chicago, Ill.
U. T. Hungerford Brass & Copper Co., 80 Lafayette St., New York, N. Y.
Joseph Oat & Sons, 232 Quarry St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Philadelphia Coppersmithing Co., 222 N. Front St., Philadelphia, Pa.
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

COPPER WORK, Architectural

E. Van Noorden Co., 100 Magazine St. Roxbury, Mass.

CORKS

Armstrong Cork & Insulation Co., Pittsburgh, Pa.
Greene Brothers, Wichita Falls, Texas. See page 61.
Griebel Instrument Co., Carbondale, Pa.
Illinois Glass Co., Alton, Ill.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

CORKS, Rubber

Diamond Rubber Co., Inc., Akron, Ohio.

COUNTERSTAFTS

Western Iron & Foundry Co., Wichita, Kansas. See page 89.

COUNTERS, Steel

Lyon Metallic Mfg. Co., Aurora, Ill.

COUPLERS, Car

North American Car Co., 327 S. LaSalle St., Chicago, Ill. See page 156.

COUPLINGS

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Barnhart-Davis Co., Warren, Pa.
Breeze Metal Hose & Mfg. Co., 22-46 S. 6th St., Newark, N. J.
Briggs Weaver Machinery Co., Dallas, Texas
Carbondale Machine Co., Carbondale, Pa.
Continental Supply Co., St. Louis, Missouri
Thos. H. Dallett Co., 165-89 Clearfield St., Philadelphia, Pa.
De Laval Steam Turbine Co., Trenton, N. J. See page 123.
Diamond Rubber Co., Inc., Akron, Ohio.
Electric Controller & Mfg. Co., 2700 E. Seventy-Ninth St., Cleveland, Ohio.
Falls Clutch & Machinery Co., Cuyahoga Falls, Ohio.
Frederick Iron & Steel Co., Frederick, Md.
Harrisburg Pipe & Pipe Bending Co., Houston, Texas
The Hill Clutch Machine & Foundry Co., Cleveland, Ohio
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y
Hughes Tool Co., 300 Hughes St., Houston, Texas. See insert.
C. B. Hunt & Son Co., Salem. O.
Jones, W. A., Foundry & Machine Co., 4415 W. Roosevelt Road, Chicago, Illinois
Geo. W. Knowlton Rubber Co., 60 Pearl St., Boston, Mass.
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.
Maintenance Eng. Corp., 1802 Conti St., Houston, Texas. See page 150.
National Supply Co., Toledo, Ohio
National Tube Co., Frick Bldg., Pittsburgh, Pa.
W. H. Nicholson & Co., 12 Oregon St., Wilkes-Barre, Pa.
Oil Well Supply Co., Pittsburgh, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Wm. Powell Co., Cincinnati, Ohio
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
John Simmons Co., 104-10 Center St., New York, N. Y.
Tennant Co., Union National Bank Bldg., Houston, Texas.
Texas Belting Co., Houston, Texas
Henry Vogt Machine Co., Louisville, Ky. See page 5.
Walworth Company, 88 Pearl St., Boston, Mass.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
T. B. Wood's Sons Co., Chambersburg, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

COUPLINGS, Flexible

Aldrich Pump Co., Foot of Pine St., Allentown, Pa.
Falls Clutch & Machinery Co., Cuyahoga Falls, Ohio.
The P. H. & F. M. Roots Co., Connersville, Ind. See inside front cover.
T. B. Wood's Sons Co., Chambersburg, Pa.

COUPLINGS, Friction Clutch

Falls Clutch & Machinery Co., Cuyahoga Falls, Ohio.

COUPLINGS, Hose

Cleveland Flue Cleaner Mfg. Co., 5318 St. Clair Ave., Cleveland, O.

COUPLINGS, Jaw

Falls Clutch & Machinery Co., Cuyahoga Falls, Ohio.

COUPLINGS, Lead Lined

United Lead Co., 111 Broadway, New York, N. Y.

COUPLINGS, Shaft

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Barnhart-Davis Co., Warren, Pa.
Briggs Weaver Machinery Co., Dallas, Texas
A. & F. Brown Co., 79 Barclay St., New York, N. Y.
Continental Supply Co., St. Louis, Missouri
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Electric Controller & Mfg. Co., 2700 E. Seventy-Ninth St., Cleveland, Ohio.
The Falk Corporation, Milwaukee, Wisconsin.
Falls Clutch & Machinery Co., Cuyahoga Falls, Ohio.
Frederick Iron & Steel Co., Frederick, Md.
Greene Brothers, Wichita Falls, Texas. See page 61.
Hall & Brown Wood Working Machine Co., Broadway, Tyler & Ninth Sts., St. Louis, Mo.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Jones, W. A., Foundry & Machine Co., 4415 W. Roosevelt Road, Chicago, Illinois
Meriam Co., 8405 Detroit Ave., Cleveland, Ohio
Mesta Machine Co., Pittsburgh, Pa.
Moloch Co., Kaukauna, Wis.
National Supply Co., Toledo, Ohio
W. H. Nicholson & Co., 12 Oregon St., Wilkes-Barre, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
A. R. Purdy Co., Inc., 790-4 Greenwich St., New York, N. Y.
Rogers Foundry & Machine, Joplin, Mo.
The P. H. & F. M. Roots Co., Connersville, Ind. See inside front cover.
Southern Engine & Pump Co., Houston, Texas
Terry Steam Turbine Co., Hartford, Conn.
Texas Belting Co., Houston, Texas.
Union Iron Works, Selma, Ala.
Weller Mfg. Co., 1820 N. Kostnor Ave., Chicago, Ill.
T. B. Wood's Sons Co., Chambersburg, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

COVERS, Dome

American Tank Co., Okla. City, Okla.
Barnhart-Davis Co., Warren, Pa.
Bruce-Macbeth Engine Co., Cleveland, Ohio
Continental Supply Co., St. Louis, Missouri
McDonald Mfg. Co., Dubuque, Ia. See back cover.
North American Car Co., 327 S. LaSalle St., Chicago, Ill. See page 156.
Rogers Foundry & Machine, Joplin, Mo.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Western Iron & Foundry Co., Wichita, Kansas. See page 89.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

COVERS, Gauge, Thief Hole

American Tank Co., Okla. City, Okla.
Barnhart-Davis Co., Warren, Pa.
Brooks Engineering Corp., 314 E. 12th St., Los Angeles, Calif.
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.

COVERS, Handhole

Glasgow Iron Co., Pottstown, Pa.

COVERS, Manhole

Glasgow Iron Co., Pottstown, Pa.

COVERINGS, High Pressure

Armstrong Cork & Insulation Co., Pittsburgh, Pa.
R. V. Aycock Co., Kansas City, Mo.
Ehret Magnesia Mfg. Co., 20 E. Jackson Blvd., Chicago, Ill.
Ehrot Magnesia Mfg. Co., Valley Forge, Pa.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Nitingale & Childs Co., 195 Albany St., Cambridge Sta., Boston, Mass.
Philip Carey Co., Cincinnati, Ohio
Rogers Asbestos Co., Houston, Texas.
Standard Asbestos Mfg. Co., 820-22 West Lake St., Chicago, Ill.

COVERING, Magnesia Boiler

Ehrot Magnesia Mfg. Co., Valley Forge, Pa.

COVERINGS, Pipe

Acme Asbestos Cov. & Supply Co., 242 N. Elizabeth St., Chicago, Ill.
Armstrong Cork & Insulation Co., Pittsburgh, Pa.
R. V. Aycock Co., Kansas City, Mo.
Banner Rock Products Co., Alexandria, Ind.
The Barber Asphalt Co., 1600 Arch St., Philadelphia, Pa.
Continental Supply Co., St. Louis, Missouri
Ehret Magnesia Mfg. Co., 20 E. Jackson Blvd., Chicago, Ill.
Ehrot Magnesia Mfg. Co., Valley Forge, Pa.
Janos Asbestos Co., 26 Cortlandt St., New York, N. Y.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
Nitingale & Childs Co., 195 Albany St., Cambridge Sta., Boston, Mass.
Norristown Mangesia & Asbestos Co., Norristown, Pa.
Paraffine Cos. Inc., San Francisco, Calif.
Philip Carey Co., Cincinnati, Ohio
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
Rogers Asbestos Co., Houston, Texas.
John Simmons Co., 104-10 Center St., New York, N. Y.
Standard Asbestos Mfg. Co., 820-22 West Lake St., Chicago, Ill.
Union Fibre Co., Winona, Minn.
Walworth Company, 88 Pearl St., Boston, Mass.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

COVERINGS, Roof Manhole

Brooks Engineering Corp., 314 E. 12th St., Los Angeles, Calif.
Continental Supply Co., St. Louis, Missouri
Greenlee Foundry Co., 662 W. Roosevelt Rd., Chicago, Ill.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

CRANES

A. D. Granger Co., 15 Park Row, New York, N. Y.

CRUSHERS

Jeffrey Mfg. Co., 904-99 No. Fourth St., Columbus, Ohio.

CUPS, Grease

Briggs Weaver Machinery Co., Dallas, Texas
Continental Supply Co., St. Louis, Missouri
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Detroit Lubricator Co., 5938 Trumbull Ave., Detroit, Mich.
Essex Brass Corp., 2000 Franklin St., Detroit, Mich.
Falls Clutch & Machinery Co., Cuyahoga Falls, Ohio.
Lunkenheimer Co., Cincinnati, Ohio See page 17.

Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
Michigan Lubricator Co., 3643 Beaubien St., Detroit, Mich.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
Oil Well Supply Co., Pittsburgh, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Penberthy Injector Co., 340 Holden Ave., Detroit, Mich.
Plouff Co., 170 Summer St., Boston, Mass.
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
John Simmons Co., 104-10 Center St., New York, N. Y.
Star Brass Mfg. Co., 53 Oliver St., Boston, Mass.
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
Union Iron Works, Selma, Ala.
Walworth Company, 88 Pearl St., Boston, Mass.
D. T. Williams Valve Co., Spring Grove Ave. & Township St., Cincinnati, Ohio. See page 35.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

CUPS, Oil, Brass

The D. T. Williams Valve Co., Cincinnati, Ohio. See page 35.

CUPS, Oil, Glass

The D. T. Williams Valve Co., Cincinnati, Ohio. See page 35.

CUPS, & RINGS, Leather, Hydraulic

Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.

CUTTERS, Flue

Briggs Weaver Machinery Co., Dallas, Texas
Chicago Pneumatic Tool Co., 6 E. 44th St., New York, N. Y.
John Dollinger, Jr., Inc., Box 423, Beaumont, Texas
Elliott Company, Jeannette, Pa. See page 101.
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
National Supply Co., Toledo, Ohio
R. S. Newbold & Son Co., Norristown, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Joseph T. Ryerson & Sons, 2558 W. 16th St., Chicago, Ill.
Sculley Steel & Iron Co., Chicago, Ill.
Walworth Company, 88 Pearl St., Boston, Mass.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.

CUTTERS, Milling

Reed-Prentice Co., Worcester, Mass.

CUTTERS, Pipe

Brazelton, Wessendorff & Nelms, Houston, Texas
Briggs Weaver Machinery Co., Dallas, Texas
Continental Supply Co., St. Louis, Missouri
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Greenfield Tap & Die Corp'n., Greenfield, Mass.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
Oil Well Supply Co., Pittsburgh, Pa.
Oster Mfg. Co., 2057 E. Sixty-First Place, Cleveland, Ohio
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
John Simmons Co., 104-10 Center St., New York, N. Y.
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
Toledo Pipe Threading Machine Co., 1445 Summit St., Toledo, O.
Trimont Mfg. Co., 55 Amory St., Roxbury, Boston, Mass.
Union Iron Works, Selma, Ala.
Walworth Company, 88 Pearl St., Boston, Mass.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

CUTTERS, Pneumatic Rivet

King Pneumatic Tool Co., 1733 Armitage Ave., Chicago, Ill.

CUTTERS, Tube

Briggs Weaver Machinery Co., Dallas, Texas
John Dollinger, Jr., Inc., Box 423, Beaumont, Texas
Elliott Company, Jeannette, Pa. See page 101.
The Lagonda Mfg. Co., Springfield, Ohio
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
R. S. Newbold & Son Co., Norristown, Pa.
Oster Mfg. Co., 2057 E. Sixty-First Place, Cleveland, Ohio
Peden Iron & Steel Co., Houston, Texas. See page 85.
Joseph T. Ryerson & Sons, 2558 W. 16th St., Chicago, Ill.
Sculley Steel & Iron Co., Chicago, Ill.
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
Walworth Company, 88 Pearl St., Boston, Mass.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

CUTTING APPARATUS

Oxweld Acetylene Co., Long Island City, L. I., N. Y.

D

DAMPERS

Barnhart-Davis Co., Warren, Pa.
C. A. Dunham Co., The Dunham Bldg., 450 E. Ohio St., Chicago, Illinois
Erie City Iron Works, Erie, Pa.
Hartwell Iron Works, Houston, Texas
Heine Boiler Co., St. Louis, Mo.
L. O. Koven & Brother, Inc., 154 Ogden Ave., Jersey City, N.J.
McDonough Coal Saving Corp'n., 3955 Grand River Ave., Detroit, Mich.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Plibrico Jointless Fire Brick Co., 1130 Clay St., Chicago, Ill. See page 9.
Powers Regulator Co., 2720 Greenview Ave., Chicago, Ill.
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
Walworth Company, 88 Pearl St., Boston, Mass.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

DECKS, Floating Tank

Columbian Steel Tank Co., 1401-1631 W. Twelfth St., Kansas City, Mo.

DEHYDRATING EQUIPMENT

Baker Ice Machine Co., 3601 Evans St., Omaha, Nebr.
The Burroughs Co., 246 N. Tenth St., Newark, N. J.
Carbondale Machine Co., Carbondale, Pa.
J. P. Devine Co., 1380 Clinton, Buffalo, N. Y.
The Sharples Specialty Co., 23rd and Westmoreland Sts., Philadelphia, Pa.
York Manufacturing Co., York, Pa. See page 143.

DEPHLEGMATORS

Blaw-Knox Co., Pittsburgh, Pa.
C. F. Braun & Co., Alhambra, Cal. See pages 78-79.
Carbondale Machine Co., Carbondale, Pa.
Cross Engineering Co., 700 Baltimore Ave., Kansas City, Mo. See page 129.
J. P. Devine Co., 1380 Clinton, Buffalo, N. Y.
Kansas City Structural Steel Co., Kansas City, Kansas.
The Kaw Boiler Works Co., Kansas City, Kansas. See page 117.
Griscom-Russell Co., 285 Madison Ave., New York, N. Y. See page 59.
Arthur G. McKee & Co., 2422 Euclid Ave., Cleveland, Ohio
Newton Process Mfg. Co., Fullerton, California.
Petroleum Iron Works, Sharon, Pa.
Philadelphia Coppersmithing Co., 222 N. Front St., Philadelphia, Pa.
Riter-Conley Co., Oliver Bldg., Pittsburgh, Pa.
Southwestern Engineering Co., Hollingsworth Bldg., Los Angeles, Cal. See page 109.
Tennant Co., Union National Bank Bldg., Houston, Texas.
M. H. Treadwell Co. of Ill., 208 S. La Salle St., Chicago, Ill.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Western Gas Construction Co., Fort Wayne, Ind.
Wheeler Condenser & Engineering Corp., 149 Broadway, N. Y., N.Y
Whitlock Coil Pipe Co., Hartford, Conn.
The Widdell Engineering Co., 512 American Bk. Bldg., Kansas City, Mo.

DETECTORS, Flow

Central Automatic Sprinkler Co., 5145 Delancey St., Philadelphia, Pa.
Lewis Steam Specialty & Valve Co., 5145 Delancey St., Philadelphia, Pa.
Schutte & Koerting Co., 1165 Thompson St., Philadelphia, Pa. See page 149.

DETECTORS, Gas

Mine Safety Appliance Co., 908-12 Chamber of Commerce Bldg., Pittsburgh, Pa. See page 162.

DEVICES, Filteration and Water Softening

Paige & Jone Chemical Co., 461-3 Fourth Ave., New York, N. Y.

DIE HEADS

Briggs Weaver Machinery Co., Dallas, Texas
Greenfield Tap & Die Corp'n., Greenfield, Mass.
Greenlee Foundry Co., 662 W. Roosevelt Rd., Chicago, Ill.
Jarecki Mfg. Co., Erie, Pa.
Landis Machine Company, Waynesboro, Pa.
Oster Mfg. Co., 2057 E. Sixty-First Place, Cleveland, Ohio
Peden Iron & Steel Co., Houston, Texas. See page 85.
Walworth Company, 88 Pearl St., Boston, Mass.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

DIES

Paragon Machine Co., 77 South Ave., Rochester, N. Y.

DIES, Pipe

Oster Mfg. Co., 2057 E. Sixty-First Place, Cleveland, Ohio

DIE STOCKS, Plain

Oster Mfg. Co., 2057 E. Sixty-First Place, Cleveland, Ohio

DIE STOCKS, Ratchet

Oster Mfg. Co., 2057 E. Sixty-First Place, Cleveland, Ohio

DISINFECTANTS

The Sherwin-Williams Co., 601 Canal Road, Cleveland, Ohio.

DISCS, Valve

Anchor Packing Co., Lafayette Bldg., Philadelphia, Pa.
Stewart R. Browne Mfg. Co., New York, N. Y.
Cincinnati Gasket & Packing Co., 1546-48 Elm St., Cincinnati, Ohio
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Diamond Rubber Co., Inc., Akron, Ohio.
Goetze Gasket & Packing Co., New Brunswick, N. J. See page 145.
Hart Co., Inc., Williamsport, Pa.
Jenkins Bros., 80 White St., New York, N. Y.
The Kennedy Valve Mfg. Co., Elmira, N. Y.
Geo. W. Knowlton Rubber Co., 60 Pearl St., Boston, Mass.
Metallo Gasket Co., New Brunswick, N. J. See page 158.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Pitts & Kitts Mfg. & Supply Co., 91 7th Ave., New York, N. Y.
Plouff Co., 170 Summer St., Boston, Mass.
Wm. Powell Co., Cincinnati, Ohio
U. S. Indestructible Gasket Co., 829 E. 15th St., Brooklyn, N. Y.
Henry Vogt Machine Co., Louisville, Ky. See page 5.
Walworth Company, 88 Pearl St., Boston, Mass.
Western Gas Construction Co., Fort Wayne, Ind.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

DISCS, Valve High Pressure

La Favorite Rubber Mfg. Co., Wagaraw Rd., Hawthorne, N. J.

DISTILLATION APPARATUS

Beach-Russ Co., 30 Church St., New York, N. Y.
C. F. Braun & Co., Alhambra, Cal. See pages 78-79.
Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
Cross Engineering Co., 700 Baltimore Ave., Kansas City, Mo. See page 129.
J. P. Devine Co., 1380 Clinton, Buffalo, N. Y.
Fort Worth Laboratories, 828½ Monroe St., Ft. Worth, Texas. See page 158.
Dean E. Foster, New Wright Bldg., Tulsa, Okla.
Greene Brothers, Wichita Falls, Texas. See page 61.
Griebel Instrument Co., Carbondale, Pa.
Griscom-Russell Co., 285 Madison Ave., New York, N. Y. See page 133.
Maintenance Eng. Corp., 1802 Conti Ct., Houston, Texas. See page 150.
Arthur G. McKee & Co., 2422 Euclid Ave., Cleveland, Ohio
Philadelphia Coppersmithing Co., 222 N. Front St., Philadelphia, Pa.
Precision Scientific Co., 822 S. Trion Ave., Chicago, Ill.
Refinery Supply Co., Tulsa, Okla. See page 44.
C. L. Tagliabue Mfg. Co., 18 33rd St., Brooklyn, N. Y. See page 49.
The Widdell Engineering Co., 512 American Bk. Bldg., Kansas City, Mo.
Winkler and Koch, 429 First National Bank, Wichita, Kansas. See page 109.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

DOORS, Ash Pit

The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.

DOOR BUCKS

E. Van Noorden Co., 100 Magazine St. Roxbury, Mass.

DOORS, Furnace

Barnhart-Davis Co., Warren, Pa.
The Brady Conveyors Corp., 20 W. Jackson Blvd., Chicago, Ill.
DeSoto Foundry & Machine Co., Mansfield, La.
Fuller-Lehigh Co., Fullerton, Pa.
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
C. J. Walton & Son, 1221 W. Main St., Louisville, Ky.

DOORS AND PARTITIONS, Kalamein

E. Van Noorden Co., 100 Magazine St. Roxbury, Mass.

DOORS, Tinclad and Kalamein

Penn Metal Co., 675 Concord Ave., Cambridge, Mass.

DRAFTING, Apparatus

Abbott-McKay Corp., 21 Pearl St., Boston, Mass.
Eugene Dietzgen Co., 162-166 W. Monroe St., Chicago, Ill.
Gilson Slide Rule Co., Niles, Mich.
Keuffel & Esser Co., Hoboken, N. J.

They Never Fail!

Saddle Gate Valves

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NOTHING seems to bring out the dependability of Kelly and Jones Valves quite so well as the exacting conditions of certain classes of oil and gas service.

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The solid disc in this valve is very narrow and V-shaped at the bottom and can, therefore, be seated more readily when dirt and sediment has collected between the seats in the valve.

Finished in all iron, or iron body brass mounted in ½" to 6" sizes.

THE KELLY & JONES CO.

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GENERAL OFFICES, PARK ROW BLDG., NEW YORK CITY

W. & L. E. Gurley, Troy, N. Y.
Kolesch & Co., 138 Fulton St., New York, N. Y.
New York Blue Print Paper Co., 102 Reade St., New York, N. Y.
Paragon Machine Co., 77 South Rochester, N. Y.
The C. F. Pease Co., 866 N. Franklin St., Chicago, Ill.
Spaulding-Moss Co., 42 Franklin St., Boston, Mass.
Williams, Brown & Earle, 918 Chestnut St., Philadelphia, Pa. See page 149

DRAWING, Equipment

Eugene Dietzgen Co., 162-166 W. Monroe St., Chicago, Ill.
W. & L. E. Gurley, Troy, N. Y.
Keuffel & Esser Co., Hoboken, N. J.
Kolesch & Co., 138 Fulton St., New York, N. Y.
Paragon Machine Co., 77 South Rochester, N. Y.
The C. F. Pease Co., 866 N. Franklin St., Chicago, Ill.
Spaulding-Moss Co., 42 Franklin St., Boston, Mass.
Williams, Brown & Earle, 918 Chestnut St., Philadelphia, Pa. See page 149

DRESSERS, Wheel

Cleveland Flue Cleaner Mfg. Co., 5318 St. Clair Ave., Cleveland, O.

DRESSERS, Emery Wheel

Roberts Steam Specialty Co., 5318 St. Clair Ave., Cleveland, Ohio

DRILLS, Electric

Goodell-Pratt Co., 57 Wells St., Greenfield, Mass.
May Machinery Co., Second National Bank Bldg., Houston, Tex.

DRILLS, Hammer, Rock, Compressed Air

Sullivan Machinery Co., 122 S. Michigan Ave., Chicago, Ill.

DRILLS, Pneumatic

May Machinery Co., Second National Bank Bldg., Houston, Tex.

DRILLS, Radial

Reed-Prentice Co., Worcester, Mass.

DRILLS, Twist

Greenfield Tap & Die Corp'n., Greenfield, Mass.

DRIVERS, Hoop

Weimar Engineering Works, Westmoreland & Jasper Sts., Philadelphia, Pa.

DRUMS, Shipping

Geuder, Paeschke & Frey Co., Western Valley, Milwaukee, Wis.

DRYERS

The American Blower Co., 6004 Russell, Detroit, Mich.
Arco Co., Cleveland, Ohio
Breeze Metal Hose & Mfg. Co., 22-46 S. 6th St., Newark, N. J
Duff Patents Co., Inc., 321 Union Trust Bldg., Pittsburgh, Pa.
Fuller-Lehigh Co., Fullerton, Pa.
Hardinge Co., Inc., York, Pa.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
McAleenan Bros. Co., Twenty-fifth and Railroad, Pittsburgh, Pa.
New York Engineering Co., 2 Rector St., New York, N. Y.
Paragon Machine Co., 77 South Rochester, N. Y.
The C. F. Pease Co., 866 N. Franklin St., Chicago, Ill.
Philadelphia Coppersmithing Co., 222 N. Front St., Philadelphia, Pa.
The Sherwin-Williams Co., 601 Canal Road, Cleveland, Ohio.
Sowers Mfg. Co., 1294 Niagara St., Buffalo, N. Y.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

DUCTS, Air

Shevlin Engineering Co., Inc., 259 W. 34th St., New York, N. Y.

DYES

The Sherwin-Williams Co., 601 Canal Road, Cleveland, Ohio.

E

ECONOMIZERS

Babcock & Wilcox Co., 85 Liberty St., New York, N. Y.
Babcock-Wilcox and Goldie-McCulloch, Ltd., Galt, Ontario, Canada
Breeze Metal Hose & Mfg. Co., 22-46 S. 6th St., Newark, N. J.
J. P. Devine Co., 1380 Clinton, Buffalo, N. Y.
Heine Boiler Co., St. Louis, Mo.
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.
New York Engineering Co., 2 Rector St., New York, N. Y.
Plouff Co., 170 Summer St., Boston, Mass.
Power Specialty Co., 111 Broadway, New York, N. Y. See page 16.
Riter-Conley Co., Oliver Bldg., Pittsburgh, Pa.
Sims Co., Erie, Pa.

EJECTORS

H. Belfield Co., 435 N. Broad St., Philadelphia, Pa.
Briggs Weaver Machinery Co., Dallas, Texas
Continental Supply Co., St. Louis, Missouri
Croll-Reynolds Eng'rg. Co., Inc., 95 Liberty St., New York, N. Y.
Elliott Company, Jeannette, Pa. See page 101.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
Nason Manufacturing Company, 7 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
Ohio Injector Co., S. Main St., Wadsworth, Ohio.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Penberthy Injector Co., 340 Holden Ave., Detroit, Mich.
Plouff Co., 170 Summer St., Boston, Mass.
The Randle Machinery Co., 1723 Power St., Cincinnati, Ohio
Rue Mfg. Co., 228 Cherry St. Philadelphia, Pa.
Schutte & Koerting Co., 1165 Thompson St., Philadelphia, Pa. See page 149.
Union Iron Works, Selma, Ala.
Walworth Company, 88 Pearl St., Boston, Mass.
Watson & McDaniel Co., 146 N. Seventh St., Philadelphia, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

ELEVATORS Bucket

Hendrick Mfg. Co., Carbondale, Pa.
Jeffrey Mfg. Co., 904-99 No. Fourth St., Columbus, Ohio.

ELEVATORS, Tray

Jeffrey Mfg. Co., 904-99 No. Fourth St., Columbus, Ohio.

ELIMINATORS, Condesnation

Sweet & Doyle Foundry & Machine Co., Green Island, Troy, N. Y. See page 45.

ELIMINATORS, Oil

The Cochrane Corp., 3130 N. 17th St., Philadelphia, Pa.
Eureka Packing Co., 78-80 Murray St., New York, N. Y.
Godfrey, Keeler Co., 70 Warren St., New York, N. Y.
Griscom-Russell Co., 285 Madison Ave., New York, N. Y. See page 59.
Hoppes Mfg. Co., 19 Larch St., Springfield, Ohio.
Plouff Co., 170 Summer St., Boston, Mass.
Jas. L. Robertson & Son, 79-80 Murray St., New York, N. Y.
Stickle Steam Specialties Co., Indianapolis, Ind.
Sweet & Doyle Foundry & Machine Co., Green Island, Troy, N. Y. See page 45.
Tennant Co., Union National Bank Bldg., Houston, Texas.

ENAMEL, Metal

Pro-Tar Products Co., 305 Delaware St., Kansas City, Mo.

ENAMEL, Oil Proof Tank

Pro-Tar Products Co., 305 Delaware St., Kansas City, Mo.

ENAMEL, Rust Proof Tank

Pro-Tar Products Co., 305 Delaware St., Kansas City, Mo.

ENAMEL, Seepage Proof for Concrete

Pro-Tar Products Co., 305 Delaware St., Kansas City, Mo.

ENGINES, Diesel

The Beesemer Gas Engine Co., Grove City, Pa. See inside back cover.

ENGINES, Gas

Advance Mfg. Co., Hamilton, Ohio.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
The Bessemer Gas Engine Co., Grove City, Pa. See inside back cover.
Bethlehem Steel Co., Bethlehem, Pa.
Briggs Weaver Machinery Co., Dallas, Texas
Bruce-Macbeth Engine Co., Cleveland, Ohio. See page 6.
Charter Gas Engine Co., Sterling, Illinois.
Chicago Pneumatic Tool Co., 6 E. 44th St., New York, N. Y.
Clark Bros. Co., Olean, N. Y. See pages 38-39.
Continental Supply Co., St. Louis, Missouri
Cook Motor Co., Delaware, Ohio.
Cooper, C. & G., Co., Mt. Vernon, Ohio. See pages 30-31.
Fairbanks, Morse & Co., 900 S. Wabash Ave., Chicago, Ill.
Wm. Galloway Co., Waterloo, Iowa
F. W. Gartner Co., Houston, Texas.
Heer Gas & Oil Engine Co., Portsmouth, Ohio.
The Hercules Corp., Evansville, Ind.
Hope Engineering & Supply Co., Mount Vernon, Ohio
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Ingersoll-Rand Co., 11 Broadway, New York, N. Y.
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.
Lucey Mfg. Corp'n., Woolworth Bldg., New York, N. Y.
Marion Machine, Foundry & Supply Co., Box 685, Marion, Ind.
Meriam Co., 8405 Detroit Ave., Cleveland, Ohio
Mesta Machine Co., Pittsburgh, Pa.
Miller Improved Gas Engine Co., Springfield, Ohio.
National Transit Pump & Machine Co., Oil City, Pa.
Oil Well Supply Co., Pittsburgh, Pa.
Otto Engine Works, 32nd & Walnut St., Philadelphia, Pa.
Pattin Bros. Co., Marietta, Ohio.
Peden Iron & Steel Co., Houston, Texas. See page 85.
The Randle Machinery Co., 1723 Power St., Cincinnati, Ohio
Joseph Reid Gas Engine Co., Oil Pa.
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
Southern Engine & Pump Co., Houston, Texas
Sterling Engine Co., 1252-1274 Niagara St., Buffalo, N. Y.
Stewart Machinery Co., Ruder Bldg., Seventh & Market Sts., St. Louis, Mo.
Superior Gas Engine Co., Springfield, Ohio
Tennant Co., Union National Bank Bldg., Houston, Texas.
Tips Foundry & Machine Co., Austin, Texas
Titusville Iron Works, Titusville, Pa.
Western Machinery Co., Los Angeles, Calif.
Wolvervine Motor Works, Inc., 35 Union Ave., Bridgeport, Conn.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.

ENGINES, Gasoline

Advance Mfg. Co., Hamilton, Ohio
The Bessemer Gas Engine Co., Grove City, Pa. See inside back cover.
Briggs Weaver Machinery Co., Dallas, Texas
Bruce-Macbeth Engine Co., Cleveland, Ohio. See page 6.
Burke Engineering Co., Holland, Mich.
Charter Gas Engine Co., Sterling, Illinois.
Climax Engineering Co., Clinton, Iowa
Continental Supply Co., St. Louis, Missouri
Cook Motor Co., Delaware, Ohio.
Cooper, C. & G., Co., Mt. Vernon, Ohio. See pages 30-31.
Domestic Engine & Pump Co., Shippensburg, Pa.
R. B. Everett Co., Houston, Texas
The Foos Gas Engine Co., Springfield, Ohio.
Wm. Galloway Co., Waterloo, Iowa
F. W. Gartner Co., Houston, Texas.
Heer Gas & Oil Engine Co., Portsmouth, Ohio.
The Hercules Corp., Evansville, Ind.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Kinney Mfg. Co., 3529-3541 Washington St., Boston, Mass.
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.
Marion Machine, Foundry & Supply Co., Box 685, Marion, Ind.
National Supply Co., Toledo, Ohio
Oil Well Supply Co., Pittsburgh, Pa.
Otto Engine Works, 32nd & Walnut St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
The Randle Machinery Co., 1723 Power St., Cincinnati, Ohio
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
George W. Smith Co., Dallas, Tex.
Southern Engine & Pump Co., Houston, Texas
Sterling Engine Co., 1252-1274 Niagara St., Buffalo, N. Y.
Stewart Machinery Co., Ruder Bldg., Seventh & Market Sts., St. Louis, Mo.
Superior Gas Engine Co., Springfield, Ohio
Tips Foundry & Machine Co., Austin, Texas
Union Gas Engine Co., Oakland, Calif.
Universal Motor Co., 39 Ceape St., Oshkosh, Wis.
Western Machinery Co., Los Angeles, Calif.
Wolvervine Motor Works, Inc., 35 Union Ave., Bridgeport, Conn.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

ENGINES, Hoist

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Briggs Weaver Machinery Co., Dallas, Texas
Continental Supply Co., St. Louis, Missouri
Domestic Engine & Pump Co., Shippensburg, Pa.
Equitable Equipment Co., Inc., New Orleans, La.
R. B. Everett Co., Houston, Texas
Fairbanks, Morse & Co., 900 S. Wabash Ave., Chicago, Ill.
A. D. Granger Co., 15 Park Row, New York, N. Y.
Hardie-Tynes Mfg. Co., Eighth Ave., & Twenty-Eighth St., Birmingham, Ala.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Mesta Machine Co., Pittsburgh, Pa.
H. A. Paine Co., 419-20 Cotton Exchange Bldg., Houston, Texas.
Peden Iron & Steel Co., Houston, Texas. See page 85.
The Randle Machinery Co., 1723 Power St., Cincinnati, Ohio
Union Gas Engine Co., Oakland, Calif.
Western Machinery Co., Los Angeles, Calif.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

ENGINES, Oil

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
The Bessemer Gas Engine Co., Grove City, Pa. See inside back cover.
Bethlehem Shipbuilding Corp., Bethlehem, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
Charter Gas Engine Co., Sterling, Illinois.
Chicago Pneumatic Tool Co., 6 E. 44th St., New York, N. Y.
Continental Supply Co., St. Louis, Missouri
Cook Motor Co., Delaware, Ohio.
The Wm. Cramp & Sons Ship & Engine Bldg. Co., Richmond & Norris Sts., Philadelphia, Pa.

De La Vergne Machine Co., 910 East 138th St., New York, N. Y.
J. P. Devine Co., 1380 Clinton, Buffalo, N. Y.
The Falk Corporation, Milwaukee, Wisconsin.
The Foos Gas Engine Co., Springfield, Ohio.
Heer Gas & Oil Engine Co., Portsmouth, Ohio.
The Hercules Corp., Evansville, Ind.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Ingersoll-Rand Co., 11 Broadway, New York, N. Y.
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.
McEwen Bros., Wellsville, N. Y.
McIntosh & Seymour Corp., Auburn, N. Y.
National Supply Co., Toledo, Ohio
National Transit Pump & Machine Co., Oil City, Pa.
Nordberg Mfg. Co., Milwaukee, Wis.
Oil Well Supply Co., Pittsburgh, Pa.
Otto Engine Works, 32nd & Walnut St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
The Randle Machinery Co., 1723 Power St., Cincinnati, Ohio
Joseph Reid Gas Engine Co., Oil Pa.
Southern Engine & Pump Co., Houston, Texas
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Superior Gas Engine Co., Springfield, Ohio
Taylor Oil Engines, Inc., 310 S. Wabash Ave., Chicago, Ill.
Tennant Co., Union National Bank Bldg., Houston, Texas.
Tips Foundry & Machine Co., Austin, Texas
Union Gas Engine Co., Oakland, Calif.
Western Machinery Co., Los Angeles, Calif.
Wolverine Motor Works, Inc., 35 Union Ave., Bridgeport, Conn.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.

ENGINES, Steam

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
The American Blower Co., 6004 Russell, Detroit, Mich.
Babcock-Wilcox and Goldie-McCulloch, Ltd., Galt, Ontario, Canada
Briggs Weaver Machinery Co., Dallas, Texas
Colburn Gear & Mfg. Co., 98 Holmes St., Norfolk Downs, Mass.
Continental Supply Co., St. Louis, Missouri
Engberg's Electric & Mechanical Works, 268 Vine St., St. Joseph, Mich.
Equitable Equipment Co., Inc., New Orleans, La.
Erie City Iron Works, Erie, Pa.
R. B. Everett Co., Houston, Texas
A. B. Farquhar, Co., Ltd., 142 N. Duke St., York, Pa.
Godfrey, Keeler Co., 70 Warren St., New York, N. Y.
A. D. Granger Co., 15 Park Row, New York, N. Y.
Hardie-Tynes Mfg. Co., Eighth Ave., & Twenty-Eighth St., Birmingham, Ala.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Kinney Mfg. Co., 3529-3541 Washington St., Boston, Mass.
James Leffel & Co., Springfield, O.
E. Leonard & Sons, Ltd., York St., London, Canada.
Mesta Machine Co., Pittsburgh, Pa.
Nagle Engine & Boiler Works, Erie, Pa.
National Supply Co., Toledo, Ohio
Nordberg Mfg. Co., Milwaukee, Wis.
Oil Well Supply Co., Pittsburgh, Pa.
H. A. Paine Co., 419-20 Cotton Exchange Bldg., Houston, Texas.
Peden Iron & Steel Co., Houston Texas. See page 85.
The Randle Machinery Co., 1723 Power St., Cincinnati, Ohio
Ridgway, Dynamo & Engine Co., Ridgway, Pa.
The Stanwood Corp., Cincinnati, O.
Tennant Co., Union National Bank Bldg., Houston, Texas.
Titusville Iron Works, Titusville, Pa.
Union Iron Works, Selma, Ala.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

EQUIPMENT, Coal and Ashes

Jeffrey Mfg. Co., 904-99 No. Fourth St., Columbus, Ohio.

EQUIPMENT, Pulverized Coal

Fuller-Lehigh Co., Fullerton, Pa.
Riley Stoker Corp., Worchester, Mass.
Tennant Co., Union National Bank Bldg., Houston, Texas.

EQUIPMENT, Cutting

The Alexander Milburn Co., 1416 W. Baltimore St., Baltimore, Md.

EQUIPMENT, Draft, Mechanical

The American Blower Co., 6004 Russell, Detroit, Mich.

EQUIPMENT, Gas and Oil Burning

The Maxon Premix Burner Co., Muncie, Ind.

EQUIPMENT, Hospital

Frank S. Betz Co., Hammond, Ind.

EQUIPMENT, Mechanical, Painting

W. N. Matthews Corp., 3714 Forrest Park Blvd., St. Louis, Mo. See page 8.

EQUIPMENT, Oxy Acetylene

Torchweld Equipment Co., 224 No. Carpenter St., Chicago, Ill.

EQUIPMENT, Safety

Pulmosan Safety Equipment Co., 45 Willoughby St., Brooklyn, New York. See page 159.

EQUIPMENT, Swing Line

Brooks Engineering Corp., 314 E. 12th St., Los Angeles, Calif.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Cal'f.
Oil Conservation Engineering Co., Cleveland, Ohio. See page 4.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.

EQUIPMENT, Tank

Westcott & Gries, Inc., Tulsa, Okla. See page 15.

EQUIPMENT, Tool Room

Lyon Metallic Mfg. Co., Aurora, Ill.

EQUIPMENT, Vent

Brooks Engineering Corp., 314 E. 12th St., Los Angeles, Calif.
McDonald Mfg. Co., Dubuque, Ia. See back cover.
Oil Conservation Engineering Co., Cleveland, Ohio. See page 4.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

EQUIPMENT, Wax Plant

Bethlehem Shipbuilding Corp., Bethlehem, Pa.

EVAPORATORS

Bethlehem Shipbuilding Corp., Bethlehem, Pa.
C. F. Braun & Co., Alhambra, Cal. See pages 78-79.
Carbondale Machine Co., Carbondale, Pa.
Croll-Reynolds Eng'rg. Co., Inc., 95 Liberty St., New York, N. Y.
J. P. Devine Co., 1380 Clinton, Buffalo, N. Y.
Dean E. Foster, New Wright Bldg., Tulsa, Okla.
Griscom-Russell Co., 285 Madison Ave., New York, N. Y. See Page 133.
Hardinge Co., Inc., York, Pa.
Kansas City Structural Steel Co., Kansas City, Kansas.
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.
Arthur G. McKee & Co., 2422 Euclid Ave., Cleveland, Ohio
New York Engineering Co., 2 Rector St., New York, N. Y.
Newton Process Mfg. Co., Fullerton, California.
Philadelphia Coppersmithing Co., 222 N. Front St., Philadelphia Pa.
Schutte & Koerting Co., 1165 Thompson St., Philadelphia, Pa. See page 149.
Riter-Conley Co., Oliver Bldg., Pittsburgh, Pa.
Ross Heater & Mfg. Co., Inc., Buffalo, N. Y.
Southwestern Engineering Co., Hollingsworth Bldg., Los Angeles, Cal. See page 109.
Sowers Mfg. Co., 1294 Niagara St., Buffalo, N. Y.
Tennant Co., Union National Bank Bldg., Houston, Texas.
M. H. Treadwell Co. of Ill., 208 S. La Salle St., Chicago, Ill.
Tulsa Boiler & Machinery Co., P. O. Box 1963, Tulsa, Okla.
United Iron Works Co., Ridge Arcade Bldg, Kansas City, Mo. See page 161.
Wheeler Condenser & Engineering Corp., 149 Broadway, N. Y., N.Y
The Widdell Engineering Co., 512 American Bk. Bldg., Kansas City, Mo.

EVAPORATORS, Lead Lined

United Lead Co., 111 Broadway, New York, N. Y.

EXCHANGERS, Heat

The Calorizing Co., Wilkinsburg, Pa.
Carbondale Machine Co., Carbondale, Pa.
The Cochrane Corp., 3130 N. 17th St., Philadelphia, Pa.
Croll-Reynolds Eng'rg. Co., Inc., 95 Liberty St., New York, N. Y.
Cross Engineering Co., 700 Baltimore Ave., Kansas City, Mo. See page 129.
J. P. Devine Co., 1380 Clinton, Buffalo, N. Y.
John Dollinger, Jr., Inc., Box 423, Beaumont, Texas
Elliott Company, Jeannette, Pa. See page 101.
Finucane Boiler Works, Houston, Texas.
Dean E. Foster, New Wright Bldg., Tulsa, Okla.
Griscom-Russell Co., 285 Madison Ave., New York, N. Y. See page 133.
Hope Engineering & Supply Co., Mount Vernon, Ohio
Jewell Polar Co., 9 S. Clinton St., Chicago, Ill.
Kansas City Structural Steel Co., Kansas City, Kansas.
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.
Arthur G. McKee & Co., 2422 Euclid Ave., Cleveland, Ohio
National Pipe Bending Co., New Haven, Conn.
Newton Process Mfg. Co., Fullerton, California.
Oil Well Supply Co., Pittsburgh, Pa.
H. A. Paine Co., 419-20 Cotton Exchange Bldg., Houston, Texas
Petroleum Iron Works, Sharon, Pa
Philadelphia Coppersmithing Co., 222 N. Front St., Philadelphia Pa.
Pioneer Tank & Boiler Co., Box 1926, Tulsa, Okla. See page 157.
Ross Heater & Mfg. Co., Inc., Buffalo, N. Y.
Schutte & Koerting Co., 1165 Thompson St., Philadelphia, Pa. See page 149.
Sims Co., Erie, Pa.
Southwestern Engineering Co. Hollingsworth Bldg., Los Angeles, Cal. See page 109.
The Superheater Co, 17 E. 42nd St., New York City, N. Y.
Tennant Co., Union National Bank Bldg., Houston, Texas.
Titusville Iron Works, Titusville Pa.
M. H. Treadwell Co. of Ill., 208 S. La Salle St., Chicago, Ill.
Tulsa Boiler & Machinery Co., P O. Box 1963, Tulsa, Okla.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Western Gas Construction Co., Fort Wayne, Ind.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
Wheeler Condenser & Engineering Corp., 149 Broadway, N. Y., N.Y
Whitlock Coil Pipe Co., Hartford, Conn.
The Widdell Engineering Co., 512 American Bk. Bldg., Kansas City, Mo.
York Manufacturing Co., York, Pa. See page 143.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

EXHAUSTERS

The American Blower Co., 6004 Russell, Detroit, Mich.
American Gas Construction Co., Newton, Iowa
Canedy-Otto Mfg. Co., Chicago Heights, Ill.
Champion Blower & Forge Co., Lancaster, Pa.
De Laval Steam Turbine Co., Trenton, N. J. See page 123.
Elliott Company, Jeannette, Pa. See page 101.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Jeffrey Mfg. Co., 904-99 No. Fourth St., Columbus, Ohio.
National Supply Co., Toledo, Ohio
New York Engineering Co., 2 Rector St., New York, N. Y.
Robinson Ventilating Co., 517 House Bldg., Pittsburgh, Pa.
The P. H. & F. M. Roots Co., Connersville, Ind. See inside front cover.
Schutte & Koerting Co., 1165 Thompson St., Philadelphia, Pa. See page 149.
Western Gas Construction Co., Fort Wayne, Ind.

EXHAUSTERS, Gas

Connersville Blower Co., Connersville, Ind.

EXHAUSTERS, Lead Lined

United Lead Co., 111 Broadway, New York, N. Y.

EXPANDERS, Boiler Tube

Babcock-Wilcox and Goldie-McCulloch, Ltd., Galt, Ontario, Can.
Ave. & Beech St., Wilmington,
Briggs Weaver Machinery Co., Dallas, Texas
Continental Supply Co., St. Louis, Missouri
John Dollinger, Jr., Inc., Box 423, Beaumont, Texas
Richard Dudgeon, Inc., New York, N. Y.
Erie City Iron Works, Erie, Pa.
Heine Boiler Co., St. Louis, Mo.
A. L. Henderer's Sons, Maryland Ave. & Beech St., Wilmington, Delaware. See page 143.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City
National Supply Co., Toledo, Ohio
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Plouff Co., 170 Summer St., Boston, Mass.
Joseph T. Ryerson & Sons, 2558 W. 16th St., Chicago, Ill.
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
Union Iron Works, Selma, Ala.
Walworth Company, 88 Pearl St., Boston, Mass.

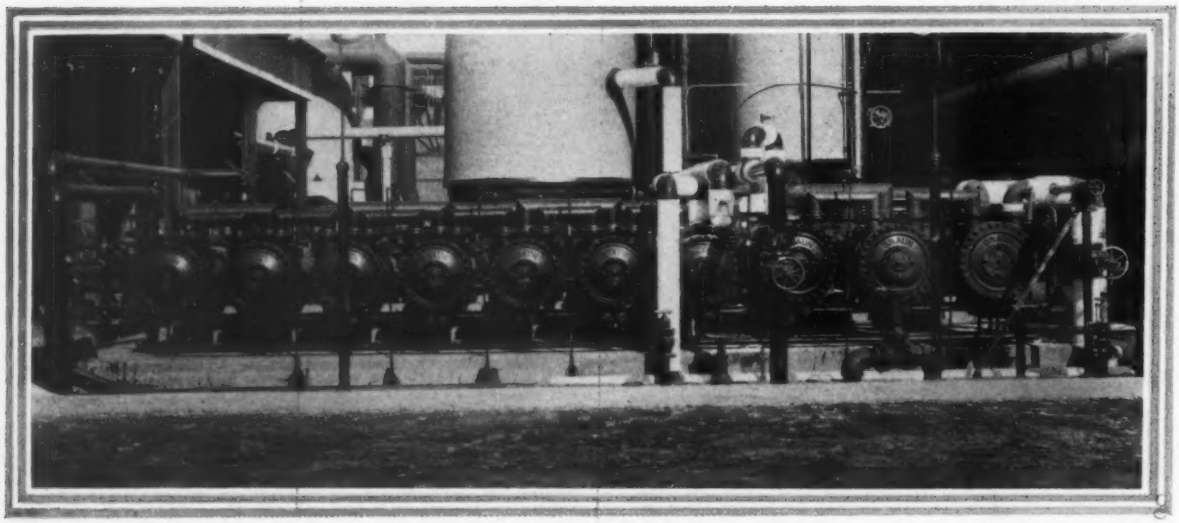
EXPANDERS, Still Tube

A. L. Henderer's Sons, Maryland Ave., & Beech St., Wilmington, Del. See page 143.

EXTINGUISHERS, Fire

Amdyco Corporation, 100 E. 42nd St., New York, N. Y.
American Fire Equipment Co., Boston, Mass.
Bethlehem Shipbuilding Corp., Bethlehem, Pa.
Briggs Weaver Machinery Co., Dallas, Texas
Continental Supply Co., St. Louis, Missouri
Foamite-Childs Corp., Utica, N. Y.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Lewis Steam Specialty & Valve Co., 5145 Delancey St., Philadelphia, Pa.
National Supply Co., Toledo, Ohio
Peden Iron & Steel Co., Houston, Texas. See page 85.
Petroleum Supply Co., Houston, Texas
Pulmosan Safety Equipment Co., 45 Willoughby St., Brooklyn, New York. See page 159.
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
John Simmons Co., 104-10 Center St., New York, N. Y.
Texas Belting Co., Houston, Texas.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

Braun



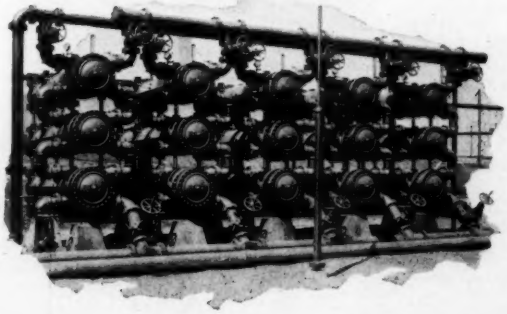
A Refinery Installation Consisting of Ten Braun Residuum-to-crude Heat Exchangers

Our engineers are at your service. They will be glad to consult with you and make recommendations as to the best equipment for your particular requirements.

Space was at a premium!

SPACE SAVING, so often a deciding factor in the selection of refinery equipment, was an absolute necessity in the Braun installation pictured at the left. The layout of the refinery called for the most advanced and compact type of heat exchange apparatus. The battery of Braun residuum-to-crude heat exchangers in this refinery not only fulfilled the space requirements, but is delivering an unusually high order of efficiency. The 10 exchangers have a heating capacity of 18,000 bbls. of crude oil daily, raising the crude temperature from 80 degrees F., to 327 degrees F. 13,200 bbls. of residuum are at the same time cooled from 480 degrees F. to 175 degrees F., at which temperature there is no need for further cooling and it is sent direct to storage.

Another Battery of Braun Residuum-to-crude Heat Exchangers in a Western Refinery



C.F.Braun & Co.

Manufacturing Mechanical Engineers
Main Office and Factory — Alhambra, California
Mid-Continent District Office — Tulsa, Oklahoma

Mention Where You Saw the Advertisement

EXTRACTORS, Grease

Boylston Steam Specialty Co., 116 W. Illinois St., Chicago, Ill.
The Cochrane Corp., 3130 N. 17th St., Philadelphia, Pa.
J. P. Devine Co., 1380 Clinton, Buffalo, N. Y.
Elliott Company, Jeannette, Pa. See page 101.
Eureka Packing Co., 78-80 Murray St., New York, N. Y.
Griscom-Russell Co., 285 Madison Ave., New York, N. Y. See page 133.
Kelley & Mueller, Inc., 34 W. Thirteenth St., New York, N. Y.
McAlear Mfg. Co., 1901-07 Southwestern Ave., Chicago, Ill.
Milwaukee Steam Appliance Co., West Allis, Wis.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
Plouff Co., 170 Summer St., Boston, Mass.
Schutte & Koerting Co., 1165 Thompson St., Philadelphia, Pa. See page 149.
Sweet & Doyle Foundry & Machine Co., Green Island, Troy, N. Y. See page 45.
Tennant Co., Union National Bank Bldg., Houston, Texas.
Thermal Efficiency Co., 1210 Scarritt Bldg., Kansas City, Mo. See page 113.

F

FANS

Robinson Ventilating Co., 517 House Bldg., Pittsburgh, Pa.

FANS, Cooling Tower

Heine Boiler Co., St. Louis, Mo.

FANS, Exhaust

Heine Boiler Co., St. Louis, Mo.

FANS, Ventilator

Heine Boiler Co., St. Louis, Mo.

FAUCETS, Barrel

American Steel Package Co., Defiance, Ohio.
Beach-Russ Co., 30 Church St., New York, N. Y.
Burlington Brass Works, Burlington, Wis.
Butler Mfg. Co., 1124 Grand Ave., Kansas City, Mo.
Columbian Steel Tank Co., 1401-1631 W. Twelfth St., Kansas City, Mo.
McDonlad Mfg. Co., Dubuque, Ia. See back cover.
Morrison Bros., Dubuque, Iowa.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
Peden Iron & Steel Co., Houston, Texas. See page 85.
Plouff Co., 170 Summer St., Boston, Mass.
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

FAUCETS, Hard Lead

United Lead Co., 111 Broadway, New York, N. Y.

FEEDERS, Boiler

De Laval Steam Turbine Co., Trenton, N. J. See page 123.
Fairbanks, Morse & Co., 900 S. Wabash Ave., Chicago, Ill.
Foster Pump Wks, Inc., 36 Bridge St., Brooklyn, N. Y.
Fuller-Lehigh Co., Fullerton, Pa.
Paul B. Huyette Co., Inc., 5 South Eighteenth St., Philadelphia, Pa.
Kelley & Mueller, Inc., 34 W. Thirteenth St., New York, N. Y.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Lake Erie Mfg. Co., Inc., 192-198 Chicago St., Buffalo, N. Y.
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.
McAlear Mfg. Co., 1901-07 S. Western Ave., Chicago, Ill.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
National Transit Pump & Machine Co., Oil City, Pa.
H. A. Paine Co., 419-20 Cotton Exchange Bldg., Houston, Texas.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Plouff Co., 170 Summer St., Boston, Mass.
"S-C" Regulator Mfg. Co., Fostoria, Ohio.
Schutte & Koerting Co., 1165 Thompson St., Philadelphia, Pa. See page 149.
Tennant Co., Union National Bank Bldg., Houston, Texas.
Union Iron Works, Selma, Ala.
William Gauge Co., 543 Fourth Ave., Pittsburgh, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

FEEDERS, Boiler Compound

The Cochrane Corp., 3130 N. 17th St., Philadelphia, Pa.
Continental Products Co., Euclid, Ohio
Hills-McCanna Co., 2025 Elston Ave., Chicago, Ill.
Plouff Co., 170 Summer St., Boston, Mass.
Sims Co., Erie, Pa.
Walworth Company, 88 Pearl St., Boston, Mass.

FELT, Asbestos Pipe Line

Philip Carey Co., Cincinnati, Ohio

FELT, Hair

Continental Supply Co., St. Louis, Missouri
Thos. H. Dallett Co., 165-89 W. Clearfield St., Philadelphia, Pa.
Ehret Magnesia Mfg. Co., 20 E. Jackson Blvd., Chicago, Ill.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
Norristown Mangesia & Asbestos Co., Norristown, Pa.
Rogers Asbestos Co., Houston, Texas.
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
Walworth Company, 88 Pearl St., Boston, Mass.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

FENCE

American Rolling Mill Co., Middletown, Ohio
Bethlehem Steel Co., Bethlehem, Pa.
Columbia Fence & Wire Co., Dallas, Texas
R. B. Everett Co., Houston, Texas
Page Steel & Wire Co., 208 S. La Salle, Chicago, Ill.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Pittsburgh Steel Co., Union Arcade Bldg., Pittsburgh, Pa.
Texas Cyclone Fence Co., 1316 E. Front St., Ft. Worth, Texas.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

FERRULES, Copper

Cincinnati Gasket & Packing Co., 1546-48 Elm St., Cincinnati, Ohio

FIBRE, Asbestos

Philip Carey Co., Cincinnati, Ohio

FILLER, Paste Iron

Detroit Graphic Co. of Texas, 1506 2nd Nat. Bk. Bldg., Houston, Texas. See page 11.

FILTERS, Air

The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.

FILTERS, Gas

Metric Metal Works, Erie, Pa. See pages 70-71.

FILTERS, Oil

Biggs Boiler Works Co., Case Ave. and Newton St., Akron, Ohio
James Bonar & Co., Park Bldg., Pittsburgh, Pa.
Bowser, S. F., & Co., Inc., 1230 Bowser Ave., Fort Wayne, Ind.
C. F. Braun & Co., Alhambra, Cal. See pages 78-79.
Briggs Weaver Machinery Co., Dallas, Texas
Burt Mfg. Co., Akron, Ohio.
A. W. Cash Co., 3rd & Eldorado Sts., Decatur, Ill.
J. P. Devine Co., 1380 Clinton, Buffalo, N. Y.
Griscom-Russell Co., 285 Madison Ave., New York, N. Y. See page 133.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Paul B. Huyette Co., Inc., 5 South Eighteenth St., Philadelphia, Pa.
Kansas City Structural Steel Co., Kansas City, Kansas.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Pipe Bending Co., New Haven, Conn.
National Valve & Mfg. Co., 31st and Liberty, Pittsburgh, Pa.
Norton Co., Worcester, Mass.
Wm. W. Nugent & Co., 410-412 No. Hermitage Ave., Chicago, Ill.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Plouff Co., 170 Summer St., Boston, Mass.
Sexton Can Company, Inc., 123 Broad St., Boston, Mass.
Sims Co., Erie, Pa.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Titusville Iron Works, Titusville, Pa.
Turner Oil Filter Co., Niles, Mich.
Henry Vogt Machine Co., Louisville, Ky. See page 5.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

FILTERS, Water

Biggs Boiler Works Co., Case Ave. and Newton St., Akron, Ohio
C. F. Braun & Co., Alhambra, Cal. See pages 78-79.
A. W. Cash Co., 3rd & Eldorado Sts., Decatur, Ill.
The Cochrane Corp., 3130 N. 17th St., Philadelphia, Pa.
J. P. Devine Co., 1380 Clinton, Buffalo, N. Y.
Elliott Company, Jeannette, Pa. See page 101.
Graver Corp., 414 Todd Ave., E. Chicago, Ind. See page 13.
International Filter Co., 335 W. Twenty-Fifth Place, Chicago, Ill.
Kansas City Structural Steel Co., Kansas City, Kansas.
National Valve & Mfg. Co., 31st and Liberty, Pittsburgh, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Plouff Co., 170 Summer St., Boston, Mass.
Power Plant Specialty Co., 440 So. Dearborn St., Chicago, Ill.
Reisert Automatic Water Purifying Co., 23 E. 26th St. New York, N. Y.
Roberts Filter Mfg., Co., 6th and Columbia Ave., Darby, Pa.
Wm. Scaife & Sons Co., Oakmont, Pa.
Sims Co., Erie, Pa.
Walworth Company, 88 Pearl St., Boston, Mass.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.
York Manufacturing Co., York, Pa. See page 143.

FINDERS, Fault

Electric Controller & Mfg. Co., 2700 E. Seventy-Ninth St., Cleveland, Ohio.

FIRE APPARATUS, Motorized

Amdyco Corporation, 100 E. 42nd St., New York, N. Y.
Foamite-Childs Corp., Utica, N. Y.

FIREPROOFING MATERIALS

Acme Asbestos Cov. & Supply Co.,
R. V. Aycock Co., Kansas City, Mo.
Banner Rock Products Co., Alexandria, Ind.
Chicago Bridge & Iron Works, 37 Van Buren St., Chicago, Ill. See page 148.
Eureka Fire Brick Works, 1507 First Nat. Bank Bldg., Pittsburgh, Pa.
Harbison Walker Refractories Co., Farmers' Bank Bldg., Pittsburgh
Johns-Manville Inc., 292 Madison Ave., New York, N. Y.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Penn Metal Co., 675 Concord Ave., Cambridge, Mass.
Philip Carey Co., Cincinnati, Ohio
Rogers Asbestos Co., Houston, Texas.

FIRST AID SUPPLIES

Frank S. Betz Co., Hammond, Ind.
Greene Brothers Wichita Falls, Texas. See page 61.
Mine Safety Appliances Co., 908-12 Chamber of Commerce Bldg., Pittsburgh, Pa. See page 162.
Pulmosan Safety Equipment Co., 45 Willoughby St., Brooklyn, New York. See page 159.

FITTINGS

Jefferson Union Company, Lexington, Mass.
Key Boiler & Equipment Co., 27th and McCasland, E. St. Louis, Ill.
Schutte & Koerting Co., 1165 Thompson St., Philadelphia, Pa. See page 149.

FITTINGS, Ammonia

York Manufacturing Co., York, Pa. See page 143.

FITTINGS ANGLE, Adjustable

American District Steam Co., N. Tonawanda, N. Y.

FITTINGS, Boiler

D. T. Williams Valve Co., Spring Grove Ave. & Township St., Cincinnati, Ohio. See page 35.

FITTINGS, Cast Iron

Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
American Cast Iron Pipe Co, Birmingham, Alabama
Baker Ice Machine Co., 3601 Evans St., Omaha, Nebr.
H. Belfield Co., 435 N. Broad St., Philadelphia, Pa.
The Brady Conveyors Corp., 20 W. Jackson Blvd., Chicago, Ill.
Briggs Weaver Machinery Co., Dallas, Texas
Continental Supply Co., St. Louis, Missouri
Grinnell Co., Inc., Providence, R.I.
Gulf Coast Machine & Supply Co., Beaumont, Texas.
Hartwell Iron Works, Houston, Texas
Horton Machine Works, 4th & Magee Sts., Elmira, N. Y.
Illinois Mallable Iron Co., 1801 Diversey Blvd., Chicago, Ill.
Independent Foundry Co., 73 York St., Portland, Ore.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Midwest Piping & Supply Co., Second & Miller Sts., St. Louis, Mo. See page 41.
Milwaukee Steam Appliance Co., West Allis, Wis.
Myerstown Foundry & Mfg. Co., 90 West St., New York, N. Y.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Cast Iron Pipe Co., Birmingham, Ala.
National Supply Co., Toledo, Ohio
National Valve & Mfg. Co., 31st and Liberty, Pittsburgh, Pa.
Oil Well Supply Co., Pittsburgh, Pa.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Petroleum Supply Co., Houston, Texas
Philadelphia Steel & Iron Co., 1008 Commercial Trust Bldg., Philadelphia, Pa.
Shaw-Kendall Engineering Company, 120-130 S. Superior St., Toledo, Ohio
John Simmons Co., 104-10 Center St., New York, N. Y.
Union Iron Works, Selma, Ala.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Walworth Company, 88 Pearl St., Boston, Mass.
Western Gas Construction Co., Fort Wayne, Ind.
Western Iron & Foundry Co., Wichita, Kansas. See page 89.
R. D. Wood & Co., 400 Chestnut St., Philadelphia, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

FITTINGS, Cast Steel

Baker Ice Machine Co., 3601 Evans St., Omaha, Nebr.
Briggs Weaver Machinery Co., Dallas, Texas
Continental Supply Co., St. Louis, Missouri
DeSoto Foundry & Machine Co., Mansfield, La.
Grinnell Co., Inc., Providence, R.I.
Gulf Coast Machine & Supply Co., Beaumont, Texas.
Harrisburg Pipe & Pipe Bending Co., Houston, Texas
Hughes Tool Co., 300 Hughes St., Houston, Texas. See insert.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.

FISHER
TRADE MARK
REGISTERED

A story
with two morals . . . .

The Setting:

In the famous Teapot Dome and Salt Creek fields, about 50 miles north of Casper, Wyoming, is the Midwest Refinery. Here extremes of temperature are the rule and not the exception—conditions of nature make the wresting of oil from the earth and its refining a giant task. There is no water and only rocks and sage brush hold sway—while in the distance, Big Horn looks down in grim silence upon the struggles of puny men.

The Theme:

Conditions demanded electric power for drilling, pumping and refining —steam was impossible; there was no water; gasoline was out of the question because of the freezing of the water in the engine jackets, so the residue gas (ordinarily worthless) was piped to Salt Creek electric plant, six miles below. Here is was burned under boilers and converted ultimately into electricity to be carried back to the field over transmission lines, where electric motors in portable houses provided a mobile power summer and winter.

A Baffling Obstacle:

Down at the power plant it was desired to regulate the boiler pressure line with automatic control by automatically firing the gas to the boilers, co-ordinate with the boiler pressure. The reason becomes clear when the human equation is finally solved. There was no governor of this kind known that was adaptable to high boiler pressure —there is now.

To the Victor Goes the Spoils:

An Engineer from the Fisher Governor Company went to the scene, got all the information, returned to the plant and, in 60 days, the problem was licked. The first unit was installed. It was thoroughly tested for a week and proved a complete success. Four more units were later shipped to complete the installation in the plant.

Moral:

No. 1. If you have an unusual job, with unusual conditions, call in the Fisher Governor Company.

No. 2. Human automatons, in the first place, are not desirable. In the second place, there is no such animal as a perfect human automaton. Firemen are human—like sentries, they have been known to go to sleep on their beat, and maybe neglect their duty while awake.

In your refinery lurks just such a danger. Guard against the inevitable with an automatic control that fires the gas to the boilers proportional to the boiler pressure.

THE FISHER GOVERNOR COMPANY

1300 Fisher Bldg.,
MARSHALLTOWN, IOWA

Mention Where You Saw the Advertisement

Kerotest Mfg. Co., 2525 Liberty Ave., Pittsburgh, Pa.
Maintenance Eng. Corp., 1802 Conti St., Houston, Texas. See page 150.
Midwest Piping & Supply Co., Second & Miller Sts., St. Louis, Mo. See page 41.
Myerstown Foundry & Mfg. Co., 90 West St., New York, N. Y.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
National Valve & Mfg. Co., 31st and Liberty, Pittsburgh, Pa.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Petroleum Supply Co., Houston, Texas
Philadelphia Steel & Iron Co., 1008 Commercial Trust Bldg., Philadelphia, Pa.
Reading Steel Castings Co., Reading, Pa.
Shaw-Kendall Engineering Company, 120-130 S. Superior St., Toledo, Ohio
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Walworth Company, 88 Pearl St., Boston, Mass.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

FITTINGS, Drop-Forged

Arctic Ice Machine Co., Canton, Ohio
Baker Ice Machine Co., 3601 Evans St., Omaha, Nebr.
Briggs Weaver Machinery Co., Dallas, Texas
Burdett Mfg. Co., 309 St. Johns Court, Chicago, Ill.
Carbondale Machine Co., Carbondale, Pa.
Continental Supply Co., St. Louis, Missouri
Great Lakes Forge Co., 14 E. Jackson Blvd., Chicago, Ill.
Grinnell Co., Inc., Providence, R.I.
Harrisburg Pipe & Pipe Bending Co,. Houston, Texas
Hydraulic Press Mfg. Co., Mt. Gilead, Ohio.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Key Boiler & Equipment Co., 27th and McCasland, E. St. Louis, Ill.
Maintenance Eng. Co., 1802 Conti St., Houston, Texas. See page 150.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Philadelphia Steel & Iron Co., 1008 Commercial Trust Bldg., Philadelphia, Pa.
Joseph T. Ryerson & Sons, 2558 W. 16th St., Chicago, Ill.
John Simmons Co., 104-10 Center St., New York, N. Y.
Henry Vogt Machine Co., Louisville, Ky. See page 5.
Walworth Company, 88 Pearl St., Boston, Mass.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

FITTINGS, Flanged

The Acme Tank Car Co., Coffeyville, Kansas
Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
Baker Ice Machine Co., 3601 Evans St., Omaha, Nebr.
H. Belfield Co., 435 N. Broad St., Philadelphia, Pa.
The Brady Conveyors Corp., 20 W. Jackson Blvd., Chicago, Ill.
Briggs Weaver Machinery Co., Dallas, Texas
Carbondale Machine Co., Carbondale, Pa.
Continental Supply Co., St. Louis, Missouri
Grirnell Co., Inc., Providence, R.I.
Gulf Coast Machine & Supply Co., Beaumont, Texas.
Harrisburg Pipe & Pipe Bending Co,. Houston, Texas
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Hughes Tool Co., 300 Hughes St., Houston, Texas. See insert.
Hydraulic Press Mfg. Co., Mt. Gilead, Ohio.
Illinois Mallable Iron Co., 1801 Diversey Blvd., Chicago, Ill.
Independent Foundry Co., 73 York St., Portland, Ore.
Jarecki Mfg. Co., Erie, Pa.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Kelly and Jones Co., Greensburg, Pa. See page 75.
The Kennedy Valve Mfg. Co., Elmira, N. Y.
Key Boiler & Equipment Co., 27th and McCasland, E. St. Louis, Ill.
Maintenance Eng. Corp., 1820 Conti St., Houston, Texas. See page 150.
Midwest Piping & Supply Co., Second & Miller Sts., St. Louis, Mo.
Moloch Co., Kaukauna, Wis.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
National Valve & Mfg. Co., 31st and Liberty, Pittsburgh, Pa.
Ohio Injector Co., S. Main St., Wadsworth, Ohio.
Oil Well Supply Co., Pittsburgh, Pa.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Petroleum Supply Co., Houston, Texas
Philadelphia Coppersmithing Co., 222 N. Front St., Philadelphia, Pa.
Philadelphia Steel & Iron Co., 1008 Commercial Trust Bldg., Philadelphia, Pa.
Shaw-Kendall Engineering Co., 120-130 S. Superior St., Toledo, Ohio.
John Simmons Co., 104-10 Center St., New York, N. Y.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
The Vilter Mfg. Co., 936 Milwaukee St., Milwaukee, Wis. See page 161.
Henry Vogt Machine Co., Louisville, Ky. See page 5.
Walworth Company, 88 Pearl St., Boston, Mass.
Western Gas Construction Co., Fort Wayne, Ind.
R. D. Wood & Co., 400 Chestnut St., Philadelphia, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

FITTINGS, Flanged Steel

Baker Ice Machine Co., 3601 Evans St., Omaha, Nebr.
Briggs Weaver Machinery Co., Dallas, Texas
Continental Supply Co., St. Louis, Missouri
Glasgow Iron Co., Pottstown, Pa.
Grinnell Co., Inc., Providence, R.I.
Gulf Coast Machine & Supply Co., Beaumont, Texas.
Hughes Tool Co., 300 Hughes St., Houston, Texas. See insert.
Hydraulic Press Mfg. Co., Mt. Gilead, Ohio.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Kelly and Jones Co., Greensburg, Pa. See page 75.
Kerotest Mfg. Co., 2525 Liberty Ave., Pittsburgh, Pa.
Malleable Iron Fittings Co., Banford, Conn.
Midwest Piping & Supply Co., Second & Miller Sts., St. Louis, Mo. See page 41.
Moloch Co., Kaukauna, Wis.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
National Valve & Mfg. Co., 31st and Liberty, Pittsburgh, Pa.
North American Car Co., 327 S. La Salle St., Chicago, Ill. See page 156.
The Ohio Steel Foundry Co., Springfield, Ohio
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Philadelphia Coppersmithing Co., 222 N. Front St., Philadelphia, Pa.
Philadelphia Steel & Iron Co., 1008 Commercial Trust Bldg., Philadelphia, Pa.
Reading Steel Castings Co., Reading, Pa.
Joseph T. Ryerson & Sons, 2558 W. 16th St., Chicago, Ill.
Shaw-Kendall Engineering Company, 120-130 S. Superior St., Toledo, Ohio
John Simmons Co., 104-10 Center St., New York, N. Y.
Standard Piping & Fittings Co., 30th and Race Sts., Philadelphia, Pa.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Henry Vogt Machine Co., Louisville, Ky. See page 5.
Walworth Company, 88 Pearl St., Boston, Mass.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

FITTINGS, Hydraulic

H. Belfield Co., 435 N. Broad St., Philadelphia, Pa.
Briggs Weaver Machinery Co., Dallas, Texas
Carbondale Machine Co., Carbondale, Pa.
Continental Supply Co., St. Louis, Missouri
Grinnell Co., Inc., Providence, R.I.
Gulf Coast Machine & Supply Co., Beaumont, Texas.
Harrisburg Pipe & Pipe Bending Co,. Houston, Texas
Hart Co., Inc., Williamsport, Pa.
Hughes Tool Co., 300 Hughes St., Houston, Texas. See insert.
Hydraulic Press Mfg. Co., Mt. Gilead, Ohio.
Jarecki Mfg. Co., Erie, Pa.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Kelly and Jones Co., Greensburg, Pa. See page 75.
Midwest Piping & Supply Co., Second & Miller Sts., St. Louis, Mo.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
National Valve & Mfg. Co., 31st and Liberty, Pittsburgh, Pa.
The Ohio Steel Foundry Co., Springfield, Ohio
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Pennsylvania Forge Co., Bridesburg, Philadelphia, Pa.
Philadelphia Steel & Iron Co., 1008 Commercial Trust Bldg., Philadelphia, Pa.
Plouff Co., 170 Summer St., Boston, Mass.
Reading Steel Castings Co., Reading, Pa.
John Simmons Co., 104-10 Center St., New York, N. Y.
Standard Piping & Fittings Co., 13th and Race Sts., Philadelphia, Pa.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Henry Vogt Machine Co., Louisville, Ky. See page 5.
Walworth Company, 88 Pearl St., Boston, Mass.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

FITTINGS, Lead Lined

United Lead Co., 111 Broadway, New York, N. Y.

FITTINGS, Long Sweep

Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
Briggs Weaver Machinery Co., Dallas, Texas
Grinnell Co., Inc., Providence, R.I.
Gulf Coast Machine & Supply Co., Beaumont, Texas.
Harrisburg Pipe & Pipe Bending Co,. Houston, Texas
Hughes Tool Co., 300 Hughes St., Houston, Texas. See insert.
Illinois Mallable Iron Co., 1801 Diversey Blvd., Chicago, Ill.
Independent Foundry Co., 73 York St., Portland, Ore.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
The Ohio Steel Foundry Co., Springfield, Ohio
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Philadelphia Coppersmithing Co., 222 N. Front St., Philadelphia, Pa.
Reading Steel Castings Co., Reading, Pa.
John Simmons Co., 104-10 Center St., New York, N. Y.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Walworth Company, 88 Pearl St., Boston, Mass.
Western Gas Construction Co., Fort Wayne, Ind.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

FITTINGS, Malleable, Screwed

Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
Briggs Weaver Machinery Co., Dallas, Texas
Grinnell Co., Inc., Providence, R.I.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Illinois Mallable Iron Co., 1801 Diversey Blvd., Chicago, Ill.
Jarecki Mfg. Co., Erie, Pa.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Kelly and Jones Co., Greensburg, Pa. See page 75.
The Kennedy Valve Mfg. Co., Elmira, N. Y.
Malleable Iron Fittings Co., Banford, Conn.
Midwest Piping & Supply Co., Second & Miller Sts., St. Louis, Mo. See page 41.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
Oil Well Supply Co., Pittsburgh, Pa.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Petroleum Supply Co., Houston, Texas
John Simmons Co., 104-10 Center St., New York, N. Y.
Walworth Company, 88 Pearl St., Boston, Mass.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.
The Youngstown Boiler & Tank Co., Youngstown, Ohio
The Youngstown Sheet & Tube Co., Youngstown, Ohio

FITTINGS, Pipe

The Acme Tank Car Co., Coffeyville, Kansas
Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
Armstrong Machinery Co., 3201-19 E. Riverside, Spokane, Wash.
Baker Ice Machine Co., 3601 Evans St., Omaha, Nebr.
The Barber Asphalt Co., 1600 Arch St., Philadelphia, Pa.
H. Belfield Co., 435 N. Broad St., Philadelphia, Pa.
The Brady Conveyors Corp., 20 W. Jackson Blvd., Chicago, Ill.
Briggs Weaver Machinery Co., Dallas, Texas
Butler Mfg. Co., 1124 Grand Ave., Kansas City, Mo.
Carbondale Machine Co., Carbondale, Pa.
Continental Supply Co., St. Louis, Missouri
Glasgow Iron Co., Pottstown, Pa.
Grinnell Co., Inc., Providence, R.I.
Harrisburg Pipe & Pipe Bending Co,. Houston, Texas
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Hughes Tool Co., 300 Hughes St., Houston, Texas. See insert.
U. T. Hungerford Brass & Copper Co., 80 Lafayette St., New York, N. Y.
Hydraulic Press Mfg. Co., Mt. Gilead, Ohio.
Illinois Mallable Iron Co., 1801 Diversey Blvd., Chicago, Ill.
Jarecki Mfg. Co., Erie, Pa.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Kelly and Jones Co., Greensburg, Pa. See page 75.
The Kennedy Valve Mfg. Co., Elmira, N. Y.
Key Boiler & Equipment Co., 27th and McCasland, E. St. Louis, Ill.
Lunkenheimer Co., Cincinnati, Ohio. See page 17.
Maintenance Eng. Corp., 1802 Conti St., Houston, Texas. See page 150.
Midwest Piping & Supply Co., Second & Miller Sts., St. Louis, Mo. See page 41.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.

National Supply Co., Toledo, Ohio
National Valve & Mfg. Co., 31st and Liberty, Pittsburgh, Pa.
North American Car Co., 327 S. LaSalle St., Chicago, Ill. See page 156.
Wm. W. Nugent & Co., 410-412 No. Hermitage Ave., Chicago, Ill.
Oil Well Supply Co., Pittsburgh, Pa.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Pennsylvania Forge Co., Bridesburg, Philadelphia, Pa. See page 33.
Petroleum Supply Co., Houston, Texas
Philadelphia Steel & Iron Co., 1008 Commercial Trust Bldg., Philadelphia, Pa.
Wm. Powell Co., Cincinnati, Ohio
Reading Steel Castings Co., Reading, Pa.
Shaw-Kendall Engineering Company, 120-130 S. Superior St., Toledo, Ohio
Standard Piping & Fittings Co., 13th and Race Sts., Philadelphia, Pa.
Union Iron Works, Selma, Ala.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Henry Vogt Machine Co., Louisville, Ky. See page 5.
Walworth Company, 88 Pearl St., Boston, Mass.
Western Gas Construction Co., Fort Wayne, Ind.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

FITTINGS, Pipe Line

The Acme Tank Car Co., Coffeyville, Kansas
Butler Mfg. Co., 1124 Grand Ave., Kansas City, Mo.
Continental Supply Co., St. Louis, Missouri
Grinnell Co., Inc., Providence, R.I.
Gulf Coast Machine & Supply Co., Beaumont, Texas.
Harrisburg Pipe & Pipe Bending Co,. Houston, Texas
Illinois Mallable Iron Co., 1801 Diversey Blvd., Chicago, Ill.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
The Kennedy Valve Mfg. Co., Elmira, N. Y.
Lunkenheimer Co., Cincinnati, Ohio. See page 17.
Maintenance Eng. Co., 1802 Conti St., Houston, Texas. See page 150.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
National Transit Pump & Machine Co., Oil City, Pa.
The Ohio Steel Foundry Co., Springfield, Ohio
Oil Well Supply Co., Pittsburgh, Pa.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Pennsylvania Forge Co., Bridesburg, Philadelphia, Pa. See page 33.
Petroleum Supply Co., Houston, Texas
Philadelphia Steel & Iron Co., 1008 Commercial Trust Bldg., Philadelphia, Pa.
Reading Steel Castings Co., Reading, Pa.
John Simmons Co., 104-10 Center St., New York, N. Y.
Standard Piping & Fittings Co., 30th and Race Sts., Philadelphia, Pa.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Walworth Company, 88 Pearl St., Boston, Mass.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

FITTINGS, Steam

Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
H. Belfield Co., 435 N. Broad St., Philadelphia, Pa.
Breeze Metal Hose & Mfg. Co., 22-46 S. 6th St., **Newark, N. J.**
Briggs Weaver Machinery Co., Dallas, Texas
Continental Supply Co., St. Louis, Missouri
Grinnell Co., Inc., Providence, R.I.
Harrisburg Pipe & Pipe Bending Co,. Houston, Texas
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Hydraulic Press Mfg. Co., Mt. Gilead, Ohio.
Illinois Mallable Iron Co., 1801 Diversey Blvd., Chicago, Ill.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Lunkenheimer Co., Cincinnati, Ohio. See page 17.
Maintenance Eng. Co., 1802 Conti St., Houston, Texas. See page 150.
Midwest Piping & Supply Co., Second & Miller Sts., St. Louis, Mo. See page 41.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
National Valve & Mfg. Co., 31st and Liberty, Pittsburgh, Pa.
The Ohio Steel Foundry Co., Springfield, Ohio
Oil Well Supply Co., Pittsburgh, Pa.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Pennsylvania Forge Co., Bridesburg, Philadelphia, Pa. See page 33.
Petroleum Supply Co., Houston. Texas
Philadelphia Steel & Iron Co., 1008 Commercial Trust Bldg., Philadelphia, Pa.
Wm. Powell Co., Cincinnati, Ohio
Reading Steel Castings Co., Reading, Pa.
Shaw-Kendall Engineering Co., 120-130 S. Superior St., Toledo, Ohio.
John Simmons Co., 104-10 Center St., New York, N. Y.
Standard Piping & Fittings Co., 30th and Race Sts., Philadelphia, Pa.
Union Iron Works, Selma. Ala.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Henry Vogt Machine Co., Louisville, Ky. See page 5.
Walworth Company, 88 Pearl St., Boston, Mass.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

FITTINGS, Steam Jacketed

The Barber Asphalt Co., 1600 Arch St., Philadelphia, Pa.

FITTINGS, Steel

Arctic Ice Machine Co., Canton, Ohio
Briggs Weaver Machinery Co., Dallas, Texas
Continental Supply Co., St. Louis, Missouri
Grinnell Co., Inc., Providence, R.I.
Gulf Coast Machine & Supply Co., Beaumont, Texas.
Harrisburg Pipe & Pipe Bending Co,. Houston, Texas
Hughes Tool Co., 300 Hughes St., Houston, Texas. See insert.
Hydraulic Press Mfg. Co., Mt. Gilead, Ohio.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Kelly and Jones Co., Greensburg, Pa. See page 75.
Kerotest Mfg. Co., 2525 Liberty Ave., Pittsburgh, Pa.
L. O. Koven & Brother, Inc., 154 Ogden Ave., Jersey City, N.J.
Maintenance Eng. Corp., 1802 Conti St., Houston, Texas. See page 150.
Midwest Piping & Supply Co., Second & Miller Sts., St. Louis, Mo. See page 41.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
The Ohio Steel Foundry Co., Springfield, Ohio
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Pennsylvania Forge Co., Bridesburg, Philadelphia, Pa. See page 33.
Petroleum Supply Co., Houston, Texas
Philadelphia Steel & Iron Co., 1008 Commercial Trust Bldg., Philadelphia, Pa.
Reading Steel Castings Co., Reading, Pa.
Joseph T. Ryerson & Sons, 2558 W. 16th St., Chicago, Ill.
John Simmons Co., 104-10 Center St., New York, N. Y.
Standard Piping & Fittings Co., 30th and Race Sts., Philadelphia, Pa.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Henry Vogt Machine Co., Louisville, Ky. See page 5.
Walworth Company, 88 Pearl St., Boston, Mass.
Western Gas Construction Co., Fort Wayne, Ind.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

FITTINGS, Union

Baker Ice Machine Co., 3601 Evans St., Omaha, Nebr.
Bard Union Co., Inc., Norwich, Conn.
Briggs Weaver Machinery Co., Dallas, Texas
Continental Supply Co., St. Louis, Missouri
Fairbanks Co., 416-22 Broome St., New York, N. Y.
Hydraulic Press Mfg. Co., Mt. Gilead, Ohio.
Illinois Mallable Iron Co., 1801 Diversey Blvd., Chicago, Ill.
Jarecki Mfg. Co., Erie, Pa.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Kelly and Jones Co., Greensburg, Pa. See page 75.
The Kennedy Valve Mfg. Co., Elmira, N. Y.
Lunkenheimer Co., Cincinnati, Ohio. See page 17.
Maintenance Eng. Corp., 1802 Conti St., Houston, Texas. See page 150.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
Wm. W. Nugent & Co., 410-412 No. Hermitage Ave., Chicago, Ill.
Oil Well Supply Co., Pittsburgh, Pa.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Pennsylvania Forge Co., Bridesburg, Philadelphia, Pa. See page 33.
Petroleum Supply Co., Houston, Texas
Philadelphia Steel & Iron Co., 1008 Commercial Trust Bldg., Philadelphia, Pa.
Wm. Powell Co., Cincinnati, Ohio
John Simmons Co., 104-10 Center St., New York, N. Y.
Henry Vogt Machine Co., Louisville, Ky. See page 5.
Walworth Company, 88 Pearl St., Boston, Mass.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.
The Youngstown Boiler & Tank Co., Youngstown, Ohio
The Youngstown Sheet & Tube Co., Youngstown, Ohio

FLANGES

Briggs Weaver Machinery Co., Dallas, Texas
Butler Mfg. Co., 1124 Grand Ave., Ave., Chicago, Ill.
Cann & Saul Steel Co., 516 Commerce St., Philadelphia, Pa.
Carbondale Machine Co., Carbondale, Pa.
Continental Supply Co., St. Louis, Missouri
Grinnell Co., Inc., Providence, R.I.
Harrisburg Pipe & Pipe Bending Co,. Houston, Texas
Hershey Machine & Foundry Co., Manheim, Pa.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Hughes Tool Co., 300 Hughes St., Houston, Texas. See insert.
Illinois Mallable Iron Co., 1801 Diversey Blvd., Chicago, Ill.
Kansas City Structural Steel Co., Kansas City, Kansas.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
The Ludlow Valve Mfg. Co., R. A. Long Bldg., Kansas City, Mo. See page 93.

The Kennedy Valve Mfg. Co., Elmira, N. Y.
Maintenance Eng. Corp., 1802 Conti St., Houston, Texas. See page 150.
Midwest Piping & Supply Co., Second & Miller Sts., St. Louis, Mo. See page 41.
Moloch Co., Kaukauna, Wis.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
National Valve & Mfg. Co., 31st and Liberty, Pittsburgh, Pa.
North American Car Co., 327 S. LaSalle St., Chicago, Ill. See page 156.
Ohio Injector Co., S. Main St., Wadsworth, Ohio.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Pennsylvania Forge Co., Bridesburg, Philadelphia, Pa., See page 33.
Petroleum Supply Co., Houston, Texas
Philadelphia Coppersmithing Co., 222 N. Front St., Philadelphia, Pa.
Philadelphia Steel & Iron Co., 1008 Commercial Trust Bldg., Philadelphia, Pa.
Reading Steel Castings Co., Reading, Pa.
Joseph T. Ryerson & Sons, 2558 W. 16th St., Chicago, Ill.
Sculley Steel & Iron Co., Chicago, Ill.
Shaw-Kendall Engineering Company, 120-130 S. Superior St., Toledo, Ohio
John Simmons Co., 104-10 Center St., New York, N. Y.
Standard Piping & Fittings Co., 30th and Race Sts., Philadelphia, Pa.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Henry Vogt Machine Co., Louisville, Ky. See page 5.
Walworth Company, 88 Pearl St., Boston, Mass.
Western Gas Construction Co., Fort Wayne, Ind.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

FLANGES, Cast Iron

The Acme Tank Car Co., Coffeyville, Kansas
Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
Baker Ice Machine Co., 3601 Evans St., Omaha, Nebr.
Barnhart-Davis Co., Warren, Pa.
Briggs Weaver Machinery Co., Dallas, Texas
Butler Mfg. Co., 1124 Grand Ave., Kansas City, Mo.
Continental Supply Co., St. Louis, Missouri
Erie City Iron Works, Erie, Pa.
Grinnell Co., Inc., Providence, R.I.
Gulf Coast Machine & Supply Co., Beaumont, Texas.
Hershey Machine & Foundry Co., Manheim, Pa.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Illinois Mallable Iron Co., 1801 Diversey Blvd., Chicago, Ill.
Independent Foundry Co., 73 York St., Portland, Ore.
Jarecki Mfg. Co., Erie, Pa.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Kelly and Jones Co., Greensburg, Pa. See page 75.
The Kennedy Valve Mfg. Co., Elmira, N. Y.
Midwest Piping & Supply Co., Second & Miller Sts., St. Louis, Mo. See page 41.
Milwaukee Steam Appliance Co., West Allis, Wis.
Moloch Co., Kaukauna, Wis.
Myerstown Foundry & Mfg. Co., 90 West St., New York, N. Y.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
National Valve & Mfg. Co., 31st and Liberty, Pittsburgh, Pa.
Nute, McGehee, Geary Co., Chambersburg, Pa.
Ohio Injector Co., S. Main St., Wadsworth, Ohio
Oil Well Supply Co., Pittsburgh, Pa.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.

Peden Iron & Steel Co., Houston, Texas. See page 85.
Petroleum Supply Co., Houston, Texas
Philadelphia Coppersmithing Co., 222 N. Front St., Philadelphia, Pa.
Philadelphia Steel & Iron Co., 1008 Commercial Trust Bldg., Philadelphia, Pa.
Wm. Powell Co., Cincinnati, Ohio
Shaw-Kendall Engineering Company, 120-130 S. Superior St., Toledo, Ohio
John Simmons Co., 104-10 Center St., New York, N. Y.
Tips Foundry & Machine Co., Austin, Texas
Union Iron Works, Selma, Ala.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Walworth Company, 88 Pearl St., Boston, Mass.
Western Gas Construction Co., Fort Wayne, Ind.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

FLANGES, Cast Steel

Baker Ice Machine Co., 3601 Evans St., Omaha, Nebr.
Briggs Weaver Machinery Co., Dallas, Texas
Continental Supply Co., St. Louis, Missouri
DeSoto Foundry & Machine Co., Mansfield, La.
Erie City Iron Works, Erie, Pa.
Grinnell Co., Inc., Providence, R.I.
Gulf Coast Machine & Supply Co., Beaumont, Texas.
Hughes Tool Co., 300 Hughes St., Houston, Texas. See insert.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Kelly and Jones Co., Greensburg, Pa. See page 75.
Kerotest Mfg. Co., 2525 Liberty Ave., Pittsburgh, Pa.
Malleable Iron Fittings Co., Banford, Conn.
Midwest Piping & Supply Co., Second & Miller Sts., St. Louis, Mo. See page 41.
Moloch Co., Kaukauna, Wis.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
National Valve & Mfg. Co., 31st and Liberty, Pittsburgh, Pa.
Ohio InJector Co., S. Main St., Wadsworth, Ohio
The Ohio Steel Foundry Co., Springfield, Ohio
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Philadelphia Coppersmithing Co., 222 N. Front St., Philadelphia, Pa.
Wm. Powell Co., Cincinnati, Ohio
Reading Steel Castings Co., Reading, Pa.
Shaw-Kendall Engineering Co., 120-130 S. Superior St., Toledo, Ohio
John Simmons Co., 104-10 Center St., New York, N. Y.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Walworth Company, 88 Pearl St., Boston, Mass.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

FLANGES, Companion

Glasgow Iron Co., Pottstown, Pa.

FLANGES, Dished Head

Glasgow Iron Co., Pottstown, Pa.

FLANGES, Floor

H. Belfield Co., 435 N. Broad St., Philadelphia, Pa.
Briggs Weaver Machinery Co., Dallas, Texas
Grinnell Co., Inc., Providence, R.I.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Illinois Mallable Iron Co., 1801 Diversey Blvd., Chicago, Ill.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
McRea & Roberts Co., 211 Campbell Ave., Detroit, Mich.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
Oil Well Supply Co., Pittsburgh, Pa.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Shaw-Kendall Engineering Co., 120-130 S. Superior St., Toledo, Ohio
John Simmons Co., 104-10 Center St., New York, N. Y.
Union Iron Works, Selma, Ala.
Walworth Company, 88 Pearl St., Boston, Mass.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

FLANGES, Forged Steel

Arctic Ice Machine Co., Canton, Ohio
Briggs Weaver Machinery Co., Dallas, Texas
Cann & Saul Steel Co., 516 Commerce St., Philadelphia, Pa.
Carbondale Machine Co., Carbondale, Pa.
John Dollinger, Jr., Inc., Box 423, Beaumont, Texas
Endicott Forging & Mfg. Co., Endicott, N. Y.
Erie City Iron Works, Erie, Pa.
Fort Worth Steel & Machinery Co., Fort Worth, Texas
P. H. Gill & Sons Forge & Machine Works, 2 Lorraine St., Brooklyn, N. Y.
Grinnell Co., Inc., Providence, R.I.
Gulf Coast Machine & Supply Co., Beaumont, Texas.
Harrisburg Pipe & Pipe Bending Co,. Houston, Texas
Hughes Tool Co., 300 Hughes St., Houston, Texas. See insert.
Kansas City Structural Steel Co., Kansas City, Kansas.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Key Boiler & Equipment Co., 27th and McCasland, E. St. Louis, Ill.
Maintenance Eng. Corp., 1802 Conti St., Houston, Texas. See page 150.
McDougall & Potter Co., 141st & Rider Ave., New York, N. Y.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
National Valve & Mfg. Co., 31st and Liberty, Pittsburgh, Pa.
North American Car Co., 327 S. LaSalle St., Chicago, Ill.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Pennsylvania Forge Co.. Bridesburg, Philadelphia, Pa. See page 33.
Petroleum Supply Co., Houston, Texas
Philadelphia Steel & Iron Co., 1008 Commercial Trust Bldg., Philadelphia, Pa.
Pioneer Tank & Boiler Co., Box 1926, Tulsa, Okla. See page 157.
Joseph T. Ryerson & Sons, 2558 W. 16th St., Chicago, Ill.
Sculley Steel & Iron Co., Chicago, Ill.
Shaw-Kendall Engineering Company, 120-130 S. Superior St., Toledo, Ohio
John Simmons Co., 104-10 Center St., New York, N. Y.
Standard Piping & Fittings Co., 30th and Race Sts., Philadelphia, Pa.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Henry Vogt Machine Co., Louisville. Ky. See page 5.
Walworth Company, 88 Pearl St., Boston, Mass.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

FLANGES, Lead Lined

United Lead Co., 111 Broadway, New York, N. Y.

FLANGES, Pipe

Glasgow Iron Co., Pottstown, Pa.

FLANGES, Pressed Steel

Glasgow Iron Co., Pottstown, Pa.

FLANGES, Riveted Work

Glasgow Iron Co., Pottstown, Pa.

FLANGES, Roof

Oil Conservation Engineering Co., Cleveland, Ohio. See page 4.

FLANGES, Saddle

Glasgow Iron Co., Pottstown, Pa.

FLANGES, Welding

Arctic Ice Machine Co., Canton, Ohio
Cann & Saul Steel Co., 516 Commerce St., Philadelphia, Pa.
Fort Worth Steel & Machinery Co., Fort Worth, Texas
Grinnell Co., Inc., Providence, R.I.
Gulf Coast Machine & Supply Co., Beaumont, Texas.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Philadelphia Coppersmithing Co., 222 N. Front St., Philadelphia, Pa.
Prospect Boiler Co., Ward St. and Raritan River R. R., New Brunswick, N. J.
Joseph T. Ryerson & Sons, 2558 W. 16th St., Chicago, Ill.
Sculley Steel & Iron Co., Chicago, Ill.
Shaw-Kendall Engineering Company, 120-130 S. Superior St., Toledo, Ohio
E. Van Noorden Co., 100 Magazine St. Roxbury, Mass.
Henry Vogt Machine Co., Louisville, Ky. See page 5.
Walworth Company, 88 Pearl St., Boston, Mass.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

FLASHLIGHTS

Serve-U Products Co., New Hdye Park, N. Y.

FLOATS, Seamless Copper

Roberts Steam Specialty Co., 5318 St. Clair Ave., Cleveland, Ohio

FLOATS, Steel

Roberts Steam Specialty Co., 5318 St. Clair Ave., Cleveland, Ohio

FLUES, Boiler

American Tube & Pipe Bending Co., Niles, Ohio
Babcock & Wilcox Co., 85 Liberty St., New York, N. Y.
Babcock-Wilcox and Goldie-McCulloch, Ltd., Galt, Ontario, Canada
Briggs Weaver Machinery Co., Dallas, Texas
The Brownell Co., Dayton, Ohio
Continental Supply Co., St. Louis, Missouri
The Cullen Co., Clinton, Iowa
D. M. Dilion Steam Boiler Works, Fitchburg, Mass.
John Dollinger, Jr., Inc., Box 423, Beaumont, Texas
F. F. Downey Boiler Works, 2600-10 W. Grand Ave., Chicago, Ill.
Erie City Iron Works, Erie, Pa.
Harrisburg Pipe & Pipe Bending Co,. Houston, Texas
Heine Boiler Co., St. Louis, Mo.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Kansas City Structural Steel Co., Kansas City, Kansas.
S. Keeler Co., Williamsport, Pa.
Milwaukee Boiler Mfg. Co., 35th St. & National Ave., Milwaukee, Wis.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
Ocean Shore Iron Works, 550 Eighth St., San Francisco, Calif.
Oil Well Supply Co., Pittsburgh, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Pioneer Tank & Boiler Co., Box 1926, Tulsa, Okla. See page 157.
Prospect Boiler Co., Ward St. and Raritan River R. R., New Brunswick, N. J.
Joseph T. Ryerson & Sons, 2558 W. 16th St., Chicago, Ill.
Sculley Steel & Iron Co., Chicago, Ill.
The Stanwood Corp., Cincinnati, O.
Tulsa Boiler & Machinery Co., P. O. Box 1963, Tulsa, Okla.
Union Iron Works, Selma, Ala.
Walworth Company, 88 Pearl St., Boston, Mass.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

FLUSH-OMETERS

Trill Indicator Co., Center St., Corry, Pa.

FLUX, Soldering

M. W. Dunton, Providence, R. I.

FLUX—Welding

Oxweld Acetylene Co., Long Island City, L. I. N. Y.

FORGES

American Gas Furnace Co., Lafayette, Spring and Elizabeth St., Elizabeth, N. J.
W. N. Best Furnace & Burner Corp., 11 Broadway, New York, New York.
Brazelton, Wessendorff & Nelms, Houston, Texas
Briggs Weaver Machinery Co., Dallas, Texas
Canedy-Otto Mfg. Co., Chicago Heights, Ill.
Champion Blower & Forge Co., Lancaster, Pa.
Continental Supply Co., St. Louis, Missouri
Eclipse Fuel Engineering Co., Rockford, Ill.
Furness Bros. Co., 1615 W. Walnut St., Chicago, Ill.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
National Supply Co., Toledo, Ohio
Oil Well Supply Co., Pittsburgh, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Joseph T. Ryerson & Sons, 2558 W. 16th St., Chicago, Ill.
Sculley Steel & Iron Co., Chicago, Ill.
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
Standard Fuel Engr'g Co., 667-687 Post Ave., So. Detroit, Mich.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

FORGES, Rivet

American Gas Furnace Co., Lafayette, Spring and Elizabeth St., Elizabeth, N. J.
Beach-Russ Co., 30 Church St., New York, N. Y.
W. N. Best Furnace & Burner Corp., 11 Broadway, New York, New York.
Brazelton, Wessendorff & Nelms, Houston, Texas
Briggs Weaver Machinery Co., Dallas, Texas
Canedy-Otto Mfg. Co., Chicago Heights, Ill.
Champion Blower & Forge Co., Lancaster, Pa.
Eclipse Fuel Engineering Co., Rockford, Ill.
Furness Bros. Co., 1615 W. Walnut St., Chicago, Ill.
Hauck Mfg. Co., 127 Tenth St., Brooklyn, N. Y.
MacLeod Company, Cincinnati, Ohio
May Machinery Co., Second National Bank Bldg., Houston, Tex.
National Supply Co., Toledo, Ohio
Peden Iron & Steel Co., Houston, Texas. See page 85.
Joseph T. Ryerson & Sons, 2558 W. 16th St., Chicago, Ill.
Sculley Steel & Iron Co., Chicago, Ill.
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
Standard Fuel Engr'g Co., 667-687 Post Ave., So. Detroit, Mich.

FORGINGS

Bethlehem Steel Co., Bethlehem, Pa.
Brass Foundry & Machine Co., Fort Wayne, Ind.
Cann & Saul Steel Co., 516 Commerce St., Philadelphia, Pa.
Cyclops Steel Co., Titusville, Pa.
P. H. Gill & Sons Forge & Machine Works, 2 Lorraine St., Brooklyn, N. Y.
Great Lakes Forge Co., 14 E. Jackson Blvd., Chicago, Ill.
Gulf Coast Machine & Supply Co., Beaumont, Texas.
Harrisburg Pipe & Pipe Bending Co,. Houston, Texas
The Hill Clutch Machine & Foundry Co., Cleveland, Ohio
McDougall & Potter Co., 141st & Rider Ave., New York, N. Y.
Mesta Machine Co., Pittsburgh, Pa.
North American Car Corp.. 327 S. LaSalle St., Chicago, Ill. See page 156.
Pennsylvania Forge Co., Bridesburg, Philadelphia, Pa. See page 33.

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WALWORTH PIPE FITTINGS
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AMERICAN WIRE LINES
WILLIAMS RAPIDUCTION THREADING MACHINE
BEAUDRY POWER HAMMERS
AMERICAN AND MONARCH LATHES
AMERICAN RADIAL DRILLS
MILWAUKEE MILLING MACHINES
LIBBY TURRET LATHES
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Peden Iron & Steel Co.

Houston San Antonio Shreveport

A. R. Purdy Co., Inc., 790-4 Greenwich St., New York, N. Y.
Philadelphia Steel & Iron Co., 1008 Commercial Trust Bldg., Philadelphia, Pa.
Joseph T. Ryerson & Sons, 2558 W. 16th St., Chicago, Ill.
Sculley Steel & Iron Co., Chicago, Ill.
Steel Improvement & Forge Co., Cleveland, Ohio.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Henry Vogt Machine Co., Louisville, Ky. See page 5.
Vulcan Steam Forging Co., 247 Rano St., Buffalo, N. Y.
Wm. Wharton, Jr. & Co., Inc., 30 Church St., New York, N. Y.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

FORGINGS, Drop

Endicott Forging & Mfg. Co., Endicott, N. Y.

FORGINGS, Hollow

Gulf Coast Machine & Supply Co., Beaumont, Texas.
Harrisburg Pipe & Pipe Bending Co,. Houston, Texas
Mesta Machine Co., Pittsburgh, Pa.
Pennsylvania Forge Co., Bridesburg, Philadelphia, Pa. See page 33.
Philadelphia Steel & Iron Co., 1008 Commercial Trust Bldg., Philadelphia, Pa.
Joseph T. Ryerson & Sons, 2558 W. 16th St., Chicago, Ill.
Vulcan Steam Forging Co., 247 Rano St., Buffalo, N. Y.
Wm. Wharton, Jr. & Co., Inc., 30 Church St., New York, N. Y.

FORGINGS, Special

Gulf Coast Machine & Supply Co., Beaumont, Texas.

FORMS, Concrete

Finucane Boiler Works, Houston, Texas.
George W. Smith Co., Dallas, Tex.

FOUNTAINS, Drinking

Audiffren Refrigerating Machine Co., 285 Madison Ave., New York, N. Y.

FRACTIONATORS

Cross Engineering Co., 700 Baltimore Ave., Kansas City, Mo. See page 129.
J. P. Devine Co., 1380 Clinton, Buffalo, N. Y.
Dean E. Foster, New Wright Bldg., Tulsa, Okla.
Griscom-Russell Co., 285 Madison Ave., New York, N. Y. See page 133.
Kansas City Structural Steel Co., Kansas City, Kansas.
Arthur G. McKee & Co., 2422 Euclid Ave., Cleveland, Ohio
Southwestern Engineering Co., Hollingsworth Bldg., Los Angeles, Cal. See page 109.
Tulsa Boiler & Machinery Co., P. O. Box 1963, Tulsa, Okla.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
The Widdell Engineering Co., 512 American Bk. Bldg., Kansas City, Mo.
Winkler and Koch, 429 First National Bank, Wichita, Kansas. See page 109.

FRONTS, Still

Barnhart-Davis Co., Warren, Pa.
McEwen Bros., Wellsville, N. Y.
Milwaukee Boiler Mfg. Co., 35th St. & National Ave., Milwaukee, Wis.
Myerston Foundry & Mfg. Co., 90 West St., New York, N. Y.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.

FRONTS, Water, for Boilers

Lamprey Co., Westfield, Mass.
A. D. Granger Co., 15 Park Row, New York, N. Y.

FURNACES

American Chimney Corp., 147 Fourth Ave., New York, N. Y.
American Gas Furnace Co., Lafayette, Spring and Elizabeth St., Elizabeth, N. J.
Barnhart-Davis Co., Warren, Pa.
W. N. Best Furnace & Burner Corp., 11 Broadway, New York, New York.
Burke Engineering Co., Holland, Mich.
Drake Non-Clinkering Furnace Blk. Co., 5 Beekman St., New York, N. Y.
Eclipse Fuel Engineering Co., Rockford, Ill.
Eureka Fire Brick Works, 1507 First Nat. Bank Bldg., Pittsburgh, Pa.
Gilbert & Barker Mfg. Co., Springfield, Mass.
George J. Hagan Co., Chamber of Commerce Bldg., Pittsburgh, Pa.
T. K. Hafris, Polytechnic Station, Fort Worth, Texas.
Hofmann Engineering Co., 557-9 W. Quincy St., Chicago, Ill.
May Machinery Co., Second National Bank Bldg., Houston, Tex.
Plibrico Jointless Fire Brick Co., 1130 Clay St., Chicago, Ill. See page 9.
Sprague Foundry & Mfg. Co., P. O. Box 334, Council Bluffs, Iowa
Standard Fuel Engr'g Co., 667-687 Post Ave., So. Detroit, Mich.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
Winkler and Koch, 429 First National Bank, Wichita, Kansas. See page 109.

FURNACES, Boiler

American Chimney Corp., 147 Fourth Ave., New York, N. Y.
American Engineering Co., Philadelphia, Pa.
Burke Engineering Co., Holland, Mich.
Drake Non-Clinkering Furnace Blk. Co., 5 Beekman St., New York, N. Y.
Eclipse Fuel Engineering Co., Rockford, Ill.
Erie City Iron Works, Erie, Pa.
Eureka Fire Brick Works, 1507 First Nat. Bank Bldg., Pittsburgh, Pa.
T. K. Harris, Polytechnic Station, Fort Worth, Texas.
McAleenan Bros. Co., Twenty-fifth and Railroad, Pittsburgh, Pa.
McLeod & Henry Co., Troy, N. Y.
Quinn & Co., 1347 Harrison Ave., Cincinnati, Ohio
Joseph T. Ryerson & Sons, 2558 W. 16th St., Chicago, Ill.
Steam Boiler Equipment Co., 1750 Monadnock Block, Chicago, Ill.
Union Iron Works, Selma, Ala.
Wellsville Fire Brick Co., Wellsville, Mo.

FURNACES, Industrial

The Denver Fire Clay Co., P. O. Box 1107 Denver, Colorado
Hofmann Engineering Co., 557-9 W. Quincy St., Chicago, Ill.

FURNITURE, Drafting Room

Abbott-McKay Corp., 21 Pearl St., Boston, Mass.
Eugene Dietzgen Co., 162-166 W. Monroe St., Chicago, Ill.
W. & L. E. Gurley, Troy, N. Y.
Keuffel & Esser Co., Hoboken, N. J.
Kolesch & Co., 138 Fulton St., New York, N. Y.
New York Blue Print Paper Co., 102 Reade St., New York, N. Y.
Paragon Machine Co., 77 South Rochester, N. Y.
The C. F. Pease Co., 866 N. Franklin St., Chicago, Ill.
Spaulding-Moss Co., 42 Franklin St., Boston, Mass.
United Alloy Steel Corp., Canton, Ohio.
Williams, Brown & Earle, 918 Chestnut St., Philadelphia, Pa. See page 149

G

GAS, Acetylene

Air Reduction Sales Co., 342 Madison Ave., New York, N. Y.
Burdett Mfg. Co., 309 St. Johns Court, Chicago, Ill.
Magnoila Gas Porducts Co., Houston, Tex.

GAS, Oxygen and Hydrogen

Air Reduction Sales Co., 342 Madison Ave., New York, N. Y.
Burdett Mfg. Co., 309 St. Johns Court, Chicago, Ill.
Carbic Mfg. Co., Duluth, Minn.
Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
Magnoila Gas Porducts Co., Houston, Tex.
National Oxygen Co., 5811 W. 66th St., Chicago, Ill.

GAS, Welding

Linde Air Products Co., 30 E. 42nd St., New York, N. Y.

GASKETS

Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
Anchor Packing Co., Lafayette Bldg., Philadelphia, Pa.
Austin-Mason Co., 15 Park Row, New York, N. Y.
R. V. Aycock Co., Kansas City, Mo.
Briggs Weaver Machinery Co., Dallas, Texas
Stewart R. Browne Mfg. Co., New York, N. Y.
Butler Mfg. Co., 1124 Grand Ave. Kansas City, Mo.
Carbondale Machine Co., Carbondale, Pa.
Chicago Belting Co., 125 N. Green, Chicago, Ill.
Chicago Rawhide Mfg. Co., 1273 Elston Ave., Chicago, Ill.
Cincinnati Gasket & Packing Co., 1546-48 Elm St., Cincinnati, Ohio
Continental Supply Co., St. Louis, Missouri
Crandall Packing Co., Palmyra, New York
Detroit Lubricator Co., 5938 Trumbull Ave., Detroit, Mich.
Edison Packing & Sales Co., 234 State St., Boston, Mass.
Eureka Packing Co., 78-80 Murray St., New York, N. Y.
"Flexitallic" Gasket Co., Camden, N. J.
Garlock Packing Co., 50 Main St., Palmyra, N. Y. See page 67.
F. W. Gartner Co., Houston, Texas.
Goetze Gasket & Packing Co., New Brunswick, N. J. See page 145.
Greene Brothers, Wichita Falls, Texas. See page 61.
Janos Asbestos Co., 26 Cortlandt St., New York, N. Y.
Jenkins Bros., 80 White St., New York, N. Y.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Keasbey & Mattison Co., Ambler, Pa.
Geo. W. Knowlton Rubber Co., 60 Pearl St., Boston, Mass.
McCord Radiator & Mfg. Co., 2587 E. Grand Blvd., Detroit, Mich.
Metallo Gasket Co., New Brunswick, N. J.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
National Valve & Mfg. Co., 31st and Liberty, Pittsburgh, Pa.
New York Belting & Packing Co., 91-93 Chamber St., New York, N. Y.
Oil Well Supply Co., Pittsburgh, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Republic Rubber Co., Youngstown, Ohio
John Simmons Co., 104-10 Center St., New York, N. Y.
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
U. S. Indestructible Gasket Co., 829 E. 15th St., Brooklyn, N. Y.
Walworth Company, 88 Pearl St., Boston, Mass.
Witherup Cork Packing Co., Beaumont, Texas.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

GASKETS, Air

Anchor Packing Co., Lafayette Bldg., Philadelphia, Pa.
Beach-Russ Co., 30 Church St., New York, N. Y.
Briggs Weaver Machinery Co., Dallas, Texas
Stewart R. Browne Mfg. Co., New York, N. Y.
Chicago Belting Co., 125 N. Green, Chicago, Ill.
Chicago Rawhide Mfg. Co., 1273 Elston Ave., Chicago, Ill.
Cincinnati Gasket & Packing Co., 1546-48 Elm St., Cincinnati, Ohio
Diamond Rubber Co., Inc., Akron, Ohio.
Edison Packing & Sales Co., 234 State St., Boston, Mass.
Garlock Packing Co., 50 Main St., Palmyra, N. Y. See page 67.
Goetze Gasket & Packing Co., New Bruswick, N. J. See page 145.
Greene Brothers, Wichita Falls, Texas. See page 61.
Jenkins Bros., 80 White St., New York, N. Y.
La Favorite Rubber Mfg. Co., Wagaraw Rd., Hawthorne, N. J.
McCord Radiator & Mfg. Co., 2587 E. Grand Blvd., Detroit, Mich.
Metallo Gasket Co., New Brunswick, N. J. See page 158.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y
National Supply Co., Toledo, Ohio
New York Belting & Packing Co., 91-93 Chamber St., New York, N. Y.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
U. S. Indestructible Gasket Co., 829 E. 15th St., Brooklyn, N. Y.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

GASKETS, Aluminum

Anchor Packing Co., Lafayette Bldg., Philadelphia, Pa.
R. V. Aycock Co., Kansas City, Mo.
Cincinnati Gasket and Packing Co., 1546-48 Elm St., Cincinnati, O.
Edison Packing & Sales Co., 234 State St., Boston, Mass.
Goetze Gasket & Packing Co., New Brunswick, N. J. See page 145.
Greene Brothers, Wichita Falls, Texas. See page 61.
McCord Radiator & Mfg. Co., 2587 E. Grand Blvd., Detroit, Mich.
Metallo Gasket Co., New Brunswick, N. J. See page 158.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
Peden Iron & Steel Co., Houston, Texas. See page 85.
Rogers Asbestos Co., Houston, Texas.
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
U. S. Indestructible Gasket Co., 829 E. 15th St., Brooklyn, N. Y.

GASKETS, Ammonia

York Manufacturing Co., York, Pa. See page 143.

GASKETS, Asbestos

Acme Asbestos Cov. & Supply Co., 242 N. Elizabeth St., Chicago, Ill.
Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
Anchor Packing Co., Lafayette Bldg., Philadelphia, Pa.
Austin-Mason Co., 15 Park Row, New York, N. Y.
R. V. Aycock Co., Kansas City, Mo.
Briggs Weaver Machinery Co., Dallas, Texas
Stewart R. Browne Mfg. Co., New York, N. Y.
Cincinnati Gasket & Packing Co., 1546-48 Elm St., Cincinnati, Ohio
Continental Supply Co., St. Louis, Missouri
Crandall Packing Co., Palmyra, New York
The Darcoid Co., 55 Warren St., New York, N. Y.
Diamond Rubber Co., Inc., Akron, Ohio.
John Dollinger, Jr., Inc., Box 423, Beaumont, Texas
Edison Packing & Sales Co., 234 State St., Boston, Mass.
Ehret Magnesia Mfg. Co., 20 E. Jackson Blvd., Chicago, Ill.
Ehrot Magnesia Mfg. Co., Valley Forge, Pa.
Eureka Packing Co., 78-80 Murray St., New York, N. Y.
"Flexitallic" Gasket Co., Camden, N. J.
Garlock Packing Co., 50 Main St., Palmyra, N. Y. See page 67.
Glasgow Iron Co., Pottstown, Pa.
Goetze Gasket & Packing Co., New Brunswick, N. J. See page 145.
Greene Brothers, Wichita Falls, Texas. See page 61.
Janos Asbestos Co., 26 Cortlandt St., New York, N. Y.
Jenkins Bros., 80 White St., New York, N. Y.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Keasbey & Mattison Co., Ambler, Pa.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Geo. W. Knowlton Rubber Co., 60 Pearl St., Boston, Mass.

La Favorite Rubber Mfg. Co., Wagaraw Rd., Hawthorne, N. J.
McCord Radiator & Mfg. Co., 2587 E. Grand Blvd., Detroit, Mich.
Metallo Gasket Co., New Brunswick, N. J. See page 158.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
New York Belting & Packing Co., 91-93 Chamber St., New York, N. Y.
Nitingale & Childs Co., 195 Albany St., Cambridge Sta., Boston, Mass.
Oil Well Supply Co., Pittsburgh, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Republic Rubber Co., Youngstown, Ohio
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
Texas Belting Co., Houston, Texas.
U. S. Indestructible Gasket Co., 829 E. 15th St., Brooklyn, N. Y.
Walworth Company, 88 Pearl St., Boston, Mass.
Witherup Cork Packing Co., Beaumont, Texas.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

GASKETS, Boiler

Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
Anchor Packing Co., Lafayette Bldg., Philadelphia, Pa.
Austin-Mason Co., 15 Park Row, New York, N. Y.
R. V. Aycock Co., Kansas City. Mo.
Briggs Weaver Machinery Co., Dallas, Texas
Stewart R. Browne Mfg. Co., New York, N. Y.
Cincinnati Gasket & Packing Co., 1546-48 Elm St., Cincinnati, Ohio
Continental Supply Co., St. Louis, Missouri
Crandall Packing Co., Palmyra, New York
Diamond Rubber Co., Inc., Akron, Ohio.
Edison Packing & Sales Co., 234 State St., Boston, Mass.
Ehret Magnesia Mfg. Co., 20 E. Jackson Blvd., Chicago, Ill.
"Flexitallic" Gasket Co., Camden, N. J.
Garlock Packing Co., 50 Main St., Palmyra, N. Y. See page 67.
Goetze Gasket & Packing Co., New Brunswick, N. J. See page 145.
Greene Brothers, Wichita Falls, Texas. See page 61.
Heine Boiler Co., 5319 Marcus Ave., St. Louis, Mo.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Janos Asbestos Co., 26 Cortlandt St., New York, N. Y.
Jenkins Bros., 80 White St., New York, N. Y.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Geo. W. Knowlton Rubber Co., 60 Pearl St., Boston, Mass.
La Favorite Rubber Mfg. Co., Wagaraw Rd., Hawthorne, N. J.
A. M. Lockett & Co., Ltd., Queet. & Crescent Bldg., New Orleans, La.
McCord Radiator & Mfg. Co., 2587 E. Grand Blvd., Detroit, Mich.
Metallo Gasket Co., New Brunswick, N. J. See page 158.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
New York Belting & Packing Co., 91-93 Chamber St., New York, N. Y.
Nitingale & Childs Co., 195 Albany St., Cambridge Sta., Boston, Mass.
Ocean Shore Iron Works, 550 Eighth St., San Francisco, Calif.
Oil Well Supply Co., Pittsburgh, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Plouff Co., 170 Summer St., Boston, Mass.
Prospect Boiler Co., Ward St. and Raritan River R. R., New Brunswick, N. J.
Joseph T. Ryerson & Sons, 2558 W. 16th St., Chicago, Ill.
Sculley Steel & Iron Co., Chicago, Ill.
John Simmons Co., 104-10 Center St., New York, N. Y.
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
Texas Belting Co., Houston, Texas.
U. S. Indestructible Gasket Co., 829 E. 15th St., Brooklyn, N. Y.
Walworth Company, 88 Pearl St., Boston, Mass.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

GASKETS, Cork

Anchor Packing Co., Lafayette Bldg., Philadelphia, Pa.
Armstrong Cork & Insulation Co., Pittsburgh, Pa.
Stewart R. Browne Mfg. Co., New York, N. Y.
Cincinnati Gasket & Packing Co., 1546-48 Elm St., Cincinnati, Ohio
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Goetze Gasket & Packing Co., New Brunswick, N. J.
Illinois Glass Co., Alton, Ill.
McCord Radiator & Mfg. Co., 2587 E. Grand Blvd., Detroit, Mich.
Metallo Gasket Co., New Brunswick, N. J. See page 158.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Plouff Co., 170 Summer St., Boston, Mass.
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
U. S. Indestructible Gasket Co., 829 E. 15th St., Brooklyn, N. Y.
Witherup Cork Packing Co., Beaumont, Texas.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

GASKETS, Corrugated Copper

Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
Anchor Packing Co., Lafayette Bldg., Philadelphia, Pa.
R. V. Aycock Co., Kansas City, Mo.
Briggs Weaver Machinery Co., Dallas, Texas
Stewart R. Browne Mfg. Co., New York, N. Y.
Cincinnati Gasket & Packing Co., 1546-48 Elm St., Cincinnati, Ohio
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Edison Packing & Sales Co., 234 State St., Boston, Mass.
Goetze Gasket & Packing Co., New Brunswick, N. J. See page 145.
Greene Brothers, Wichita Falls, Texas. See page 61.
U. T. Hungerford Brass & Copper Co., 80 Lafayette St., New York, N. Y.
McCord Radiator & Mfg. Co., 2587 E. Grand Blvd., Detroit, Mich.
Metallo Gasket Co., New Brunswick N. J.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Plouff Co., 170 Summer St., Boston, Mass.
John Simmons Co., 104-10 Center St., New York, N. Y.
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
Texas Belting Co., Houston, Texas.
U. S. Indestructible Gasket Co., 829 E. 15th St., Brooklyn, N. Y.
Walworth Company, 88 Pearl St., Boston, Mass.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

GASKETS, Double Fold

La Favorite Rubber Mfg. Co., Wagaraw Rd., Hawthorne, N. J.

GASKETS, Felt

Anchor Packing Co., Lafayette Bldg., Philadelphia, Pa.
Booth Felt Co., Inc., 463-473 Nineteenth St., Brooklyn. N. Y.
Cincinnati Gasket & Packing Co., 1546-48 Elm St., Cincinnati, Ohio
Garlock Packing Co., 50 Main St., Palmyra, N. Y. See page 67.
Monarch Belting Co., 1270 Ontario St., Cleveland, Ohio.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Plouff Co., 170 Summer St., Boston, Mass.
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
U. S. Indestructible Gasket Co., 829 E. 15th St., Brooklyn, N. Y.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

GASKETS, Handhole

Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
Acme Asbestos Cov. & Supply Co., 242 N. Elizabeth St., Chicago, Ill.
Anchor Packing Co., Lafayette Bldg., Philadelphia, Pa.
Austin-Mason Co., 15 Park Row, New York, N. Y.
R. V. Aycock Co., Kansas City, Mo.
Briggs Weaver Machinery Co., Dallas, Texas
Stewart R. Browne Mfg. Co., New York, N. Y.
Cincinnati Gasket & Packing Co., 1546-48 Elm St., Cincinnati, Ohio
Continental Supply Co., St. Louis, Missouri
Crandall Packing Co., Palmyra, New York
The Darcoid Co., 55 Warren St., New York, N. Y.
Diamond Rubber Co., Inc., Akron, Ohio.
Edison Packing & Sales Co., 234 State St., Boston, Mass.
Ehret Magnesia Mfg. Co., 20 E. Jackson Blvd., Chicago, Ill.
Eureka Packing Co., 78-80 Murray St., New York, N. Y.
"Flexitallic" Gasket Co., Camden, N. J.
Garlock Packing Co., 50 Main St., Palmyra, N. Y. See page 67.
Glasgow Iron Co., Pottstown, Pa.
Goetze Gasket & Packing Co., New Brunswick, N. J. See page 145.
Greene Brothers, Wichita Falls, Texas. See page 61.
Heine Boiler Co., St. Louis, Mo.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Janos Asbestos Co., 26 Cortlandt St., New York, N. Y.
Jenkins Bros., 80 White St., New York, N. Y.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Keasbey & Mattison Co., Ambler, Pa.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Geo. W. Knowlton Rubber Co., 60 Pearl St., Boston, Mass.
La Favorite Rubber Mfg. Co., Wagaraw Rd., Hawthorne, N. J.
McCord Radiator & Mfg. Co., 2587 E. Grand Blvd., Detroit, Mich.
Metallo Gasket Co., New Brunswick, N. J. See page 158.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
New York Belting & Packing Co., 91-93 Chamber St., New York, N. Y.
Nitingale & Childs Co., 195 Albany St., Cambridge Sta., Boston, Mass.
Oil Well Supply Co., Pittsburgh, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Petroleum Supply Co., Houston, Texas
Rogers Asbestos Co., Houston, Texas.
Sculley Steel & Iron Co., Chicago, Ill.
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
Texas Belting Co., Houston, Texas.
Union Iron Works, Selma, Ala.
U. S. Indestructible Gasket Co., 829 E. 15th St., Brooklyn, N. Y.
Walworth Company, 88 Pearl St., Boston, Mass.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

GASKETS, Leather

Chas. A. Schieren Co., 77 Ferry St. New York, N. Y.

GASKETS, Manhole

Acme Asbestos Cov. & Supply Co., 242 N. Elizabeth St., Chicago, Ill.
Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
Anchor Packing Co., Lafayette Bldg., Philadelphia, Pa.
Austin-Mason Co., 15 Park Row, New York, N. Y.
R. V. Aycock Co., Kansas City, Mo.

Briggs Weaver Machinery Co., Dallas, Texas
Stewart R. Browne Mfg. Co., New York, N. Y.
Cincinnati Gasket & Packing Co., 1546-48 Elm St., Cincinnati, Ohio
Continental Supply Co., St. Louis, Missouri
Crandall Packing Co., Palmyra, New York
The Darcoid Co., 55 Warren St., New York, N. Y.
Diamond Rubber Co., Inc., Akron, Ohio.
John Dollinger, Jr., Inc., Box 423, Beaumont, Texas
Edison Packing & Sales Co., 234 State St., Boston, Mass.
Eureka Packing Co., 78-80 Murray St., New York, N. Y.
Garlock Packing Co., 50 Main St., Palmyra, N. Y. See page 67.
General American Tank Car Corp., 940 Illinois Merc. Bank Bldg., Chicago, Ill. See page 145.
Goetze Gasket & Packing Co., New Brunswick, N. J. See page 145.
Greene Brothers, Wichita Falls, Texas. See page 61.
Heine Boiler Co., St. Louis, Mo.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Janos Asbestos Co., 26 Cortlandt St., New York, N. Y.
Jenkins Bros., 80 White St., New York, N. Y.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Keasbey & Mattison Co., Ambler, Pa.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Geo. W. Knowlton Rubber Co., 60 Pearl St., Boston, Mass.
La Favorite Rubber Mfg. Co., Wagaraw Rd., Hawthorne, N. J.
McCord Radiator & Mfg. Co., 2587 E. Grand Blvd., Detroit, Mich.
Metallo Gasket Co., New Brunswick. N. J. See page 158.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
New York Belting & Packing Co., 91-93 Chamber St., New York, N. Y.
Nitingale & Childs Co., 195 Albany St., Cambridge Sta., Boston, Mass.
Ocean Shore Iron Works, 550 Eighth St., San Francisco, Calif.
Oil Well Supply Co., Pittsburgh, Pa.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Rogers Asbestos Co., Houston, Texas.
Sculley Steel & Iron Co., Chicago, Ill.
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
Texas Belting Co., Houston, Texas.
Union Iron Works. Selma, Ala.
U. S. Indestructible Gasket Co., 829 E. 15th St., Brooklyn, N. Y.
Walworth Company, 88 Pearl St., Boston, Mass.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

GASKETS, Metal

Anchor Packing Co., Lafayette Bldg., Philadelphia, Pa.
R. V. Aycock Co., Kansas City, Mo.
Stewart R. Browne Mfg. Co., New York, N. Y.
Cincinnati Gasket & Packing Co., 1546-48 Elm St., Cincinnati, Ohio
Equitable Equipment Co., Inc., New Orleans, La.
"Flexitallic" Gasket Co., Camden, N. J.
Garlock Packing Co., 50 Main St., Palmyra, N. Y. See page 67.
Goetze Gasket & Packing Co., New Brunswick, N. J. See page 145.
Greene Brothers, Wichita Falls, Texas. See page 61.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Key Boiler & Equipment Co., 27th and McCasland, E. St. Louis, Ill.
McCord Radiator & Mfg. Co., 2587 E. Grand Blvd., Detroit, Mich.
Metallo Gasket Co., New Brunswick, N. J. See page 158.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
Peden Iron & Steel Co., Houston, Texas. See page 85.
John Simmons Co., 104-10 Center St., New York, N. Y.
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.

Texas Belting Co., Houston, Texas.
U. S. Indestructible Gasket Co., 829 E. 15th St., Brooklyn, N. Y.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

GASKETS, Oil

Anchor Packing Co., Lafayette Bldg., Philadelphia, Pa.
Briggs Weaver Machinery Co., Dallas, Texas
Stewart R. Browne Mfg. Co., New York, N. Y.
Cincinnati Gasket & Packing Co., 1546-48 Elm St., Cincinnati, Ohio
Diamond Rubber Co., Inc., Akron, Ohio.
Edison Packing & Sales Co., 234 State St., Boston, Mass.
Garlock Packing Co., 50 Main St., Palmyra, N. J. See page 67.
Goetze Gasket & Packing Co., New Brunswick, N. J. See page 145.
B. F. Goodrich Rubber Co., Akron, Ohio
Greene Brothers, Wichita Falls, Texas. See page 61.
Jenkins Bros., 80 White St., New York, N. Y.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
La Favorite Rubber Mfg. Co., Wagaraw Rd., Hawthorne, N. J.
Lake Erie Mfg. Co., Inc., 192-198 Chicag St., Buffalo, N. Y.
McCord Radiator & Mfg. Co., 2587 E. Grand Blvd., Detroit, Mich.
Metallo Gasket Co., New Brunswick, N. J. See page 158.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
New York Belting & Packing Co., 91-93 Chamber St., New York, N. Y.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
U. S. Indestructible Gasket Co., 829 E. 15th St., Brooklyn, N. Y.
Walworth Company, 88 Pearl St., Boston, Mass.
Witherup Cork Packing Co., Beaumont, Texas.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

GASKETS, Paper

Anchor Packing Co., Lafayette Bldg., Philadelphia, Pa.
Briggs Weaver Machinery Co., Dallas, Texas
Stewart R. Browne Mfg. Co., New York, N. Y.
Cincinnati Gasket & Packing Co., 1546-48 Elm St., Cincinnati, Ohio
Edison Packing & Sales Co., 234 State St., Boston, Mass.
Forney Fibre Co., 99 Boyd Ave., Jersey City, N. J.
Garlock Packing Co., 50 Main St., Palmyra, N. Y. See page 67.
Goetze Gasket & Packing Co., New Brunswick, N. J. See page 145.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
U. S. Indestructible Gasket Co., 829 E. 15th St., Brooklyn, N. Y.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

GASKETS, Rubber

Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
Anchor Packing Co., Lafayette Bldg., Philadelphia, Pa.
Austin-Mason Co., 15 Park Row, New York, N. Y.
R. V. Aycock Co., Kansas City, Mo.
Black, Sivalls & Bryson, Bartlesville, Okla.
Briggs Weaver Machinery Co., Dallas, Texas
Stewart R. Browne Mfg. Co., New York, N. Y.
Cincinnati Gasket & Packing Co., 1546-48 Elm St., Cincinnati, Ohio
Continental Supply Co., St. Louis, Missouri
Crandall Packing Co., Palmyra, New York
The Darcoid Co., 55 Warren St., New York, N. Y.
Diamond Rubber Co., Inc., Akron, Ohio.
Edison Packing & Sales Co., 234 State St., Boston, Mass.
Eureka Packing Co., 78-80 Murray St., New York, N. Y.
Garlock Packing Co., 50 Main St., Palmyra, N. Y. See page 67.
Goetze Gasket & Packing Co., New Brunswick, N. J. See page 145.
Glasgow Iron Co., Pottstown, Pa.
B. F. Goodrich Rubber Co., Akron, Ohio
Greene Brothers, Wichita Falls, Texas. See page 61.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Janos Asbestos Co., 26 Cortlandt St., New York, N. Y.
Jenkins Bros., 80 White St., New York, N. Y.
Palmyra, N. Y.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Geo. W. Knowlton Rubber Co., 60 Pearl St., Boston, Mass.
La Favorite Rubber Mfg. Co., Wagaraw Rd., Hawthorne, N. J.
The Manhattan Rubber Mfg. Co., Passaic, N. J.
Metallo Gasket Co., New Brunswick, N. J. See page 158.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
New York Belting & Packing Co., 91-93 Chamber St., New York, N. Y.
Oil Well Supply Co., Pittsburgh, Pa.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Pioneer Rubber Mills, 353 Sacramento St., San Francisco, Calif.
Republic Rubber Co., Youngstown, Ohio
Sculley Steel & Iron Co., Chicago, Ill.
John Simmons Co., 104-10 Center St., New York, N. Y.
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
Union Iron Works, Selma, Ala.
U. S. Indestructible Gasket Co., 829 E. 15th St., Brooklyn, N. Y.
Voorhees Rubber Mfg. Co., 20 Bostwick Ave., Jersey City, N.J.
Walworth Company, 88 Pearl St., Boston, Mass.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

GASKETS, Steam

Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
Anchor Packing Co., Lafayette Bldg., Philadelphia, Pa.
Austin-Mason Co., 15 Park Row, New York, N. Y.
Briggs Weaver Machinery Co., Dallas, Texas
Stewart R. Browne Mfg. Co., New York, N. Y.
Cincinnati Gasket & Packing Co., 1546-48 Elm St., Cincinnati, Ohio
Crandall Packing Co., Palmyra, New York
Diamond Rubber Co., Inc., Akron, Ohio.
Edison Packing & Sales Co., 234 State St., Boston, Mass.
Eureka Packing Co., 78-80 Murray St., New York, N. Y.
"Flexitallic" Gasket Co., Camden, N. J.
Garlock Packing Co., 50 Main St., Palmyra, N. Y. See page 67.
Goetze Gasket & Packing Co., New Brunswick, N. J. See page 145.
B. F. Goodrich Rubber Co., Akron, Ohio
Greene Brothers, Wichita Falls, Texas. See page 61.
Janos Asbestos Co., 26 Cortlandt St., New York, N. Y.
Jenkins Bros., 80 White St., New York, N. Y.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
La Favorite Rubber Mfg. Co., Wagaraw Rd., Hawthorne, N. J.
McCord Radiator & Mfg. Co., 2587 E. Grand Blvd., Detroit, Mich.
Metallo Gasket Co., New Brunswick, N. J. See page 158.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
New York Belting & Packing Co., 91-93 Chamber St., New York, N. Y.
Oil Well Supply Co., Pittsburgh, Pa.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
John Simmons Co., 104-10 Center St., New York, N. Y.
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
Union Iron Works, Selma, Ala.
U. S. Indestructible Gasket Co., 829 E. 15th St., Brooklyn, N. Y.
Walworth Company, 88 Pearl St., Boston, Mass.
Witherup Cork Packing Co., Beaumont, Texas.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

GASKETS, Vulcanized Fibre

Anchor Packing Co., Lafayette Bldg., Philadelphia, Pa.
Briggs Weaver Machinery Co., Dallas, Texas
Stewart R. Browne Mfg. Co., New York, N. Y.
Butler Mfg. Co., 1124 Grand Ave., Kansas City, Mo.
Cincinnati Gasket & Packing Co., 1546-48 Elm St., Cincinnati, Ohio
Garlock Packing Co., 50 Main St., Palmyra, N. Y. See page 67.
Jenkins Bros., 80 White St., New York, N. Y.
Lake Erie Mfg. Co., Inc., 192-198 Chicag St., Buffalo, N. Y.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
Plouff Co., 170 Summer St., Boston, Mass.
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
Texas Belting Co., Houston, Texas.
U. S. Indestructible Gasket Co., 829 E. 15th St., Brooklyn, N. Y.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

GAUGES

Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
The Alexander Milburn Co., 1416 W. Baltimore St., Baltimore, Md.
American Schaeffer & Budenberg Corp., Berry & S. 5th St., Brooklyn, N. Y.
Barnhart-Davis Co., Warren, Pa.
H. Belfield Co., 435 N. Broad St., Philadelphia, Pa.
Briggs Weaver Machinery Co., Dallas, Texas
Brown Instrument Co., 4537 Wayne Ave., Philadelphia, Pa.
Continental Supply Co., St. Louis, Missouri
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Detroit Lubricator Co., 5938 Trumbull Ave., Detroit, Mich.
Fort Worth Laboratories, 828½ Monroe St., Ft. Worth, Texas. See page 158.
The Foxboro Co., Inc., Foxboro, Mass. See page 155.
Greene Brothers, Wichita Falls, Texas. See page 61.
Griebel Instrument Co., Carbondale, Pa.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Junkenheimer Co., Cincinnati, O.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
Meriam Co., 8405 Detroit Ave., Cleveland, Ohio
Metric Metal Works, Erie, Pa. See pages 70-71.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Plouff Co., 170 Summer St., Boston, Mass.
Refinery Supply Co., Tulsa, Okla. See page 44.
Star Brass Mfg. Co., 53 Oliver St., Boston, Mass.
Carl H. Wagner, 1944 W. Albany Ave., Chicago, Ill.
Walworth Company, 88 Pearl St., Boston, Mass.
Western Gas Construction Co., Fort Wayne, Ind.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

GAUGES, Air

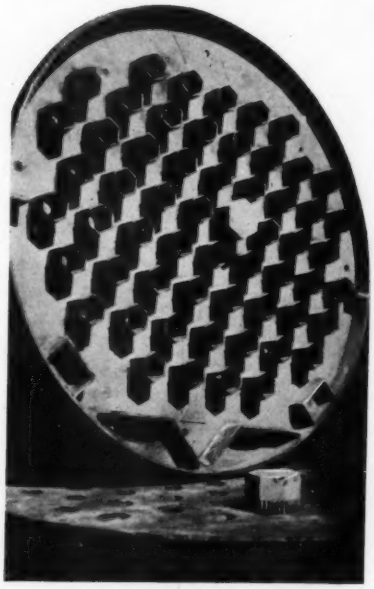
Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill
The Alexander Milburn Co., 1416 W. Baltimore St., Baltimore, Md.
Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
American Schaeffer & Budenberg Corp., Berry & S. 5th St., Brooklyn, N. Y. See page 153.
Ashton Valve Co., 161 First St., Cambridge, Boston, Mass.
Brunner Mfg. Co., Utica, N. Y.

Briggs Weaver Machinery Co., Dallas, Texas
The Bristol Co., Waterbury, Conn. See page 154.
Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
Continental Supply Co., St. Louis, Missouri
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Equitable Meter and Mfg. Co., 422-434-444 First Ave., Pittsburgh, Pa.
The Esterline-Angus Co., P. O. Box 596, Indianapolis, Ind.
Greene Brothers, Wichita Falls, Texas. See page 61.
Griebel Instrument Co., Carbondale, Pa.
Jos. W. Hays Corp., 1042 E. 8th St., Michigan City, Ind.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
Metric Metal Works, Erie, Pa. See pages 70-71.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Gauge Co., 300 Pacific St., Brooklyn, N. Y.
National Supply Co., Toledo, Ohio
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Plouff Co., 170 Summer St., Boston, Mass.
Refinery Supply Co., Tulsa, Okla. See page 44.
John Simmons Co., 104-10 Center St., New York, N. Y.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Henry Vogt Machine Co., Louisville, Ky. See page 5.
Carl H. Wagner, 1944 W. Albany Ave., Chicago, Ill
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.
York Manufacturing Co., York, Pa. See page 143.

GAUGES, Ammonia

Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
American Schaeffer & Budenberg Corp., Berry & S. 5th St., Brooklyn, N. Y. See page 153.
Ashton Valve Co., 161 First St., Cambridge, Boston, Mass.
Arctic Ice Machine Co., Canton, Ohio
Baker Ice Machine Co., 3601 Evans St., Omaha, Nebr.
Briggs Weaver Machinery Co., Dallas, Texas
The Bristol Co., Waterbury, Conn. See page 154.
Carbondale Machine Co., Carbondale, Pa.
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Greene Brothers, Wichita Falls, Texas. See page 61.
Griebel Instrument Co., Carbondale, Pa.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
Metric Metal Works, Erie, Pa See pages 70-71.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Gauge Co., 300 Pacific St., Brooklyn, N. Y.
National Supply Co., Toledo, Ohio
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Plouff Co., 170 Summer St., Boston, Mass.
Star Brass Mfg. Co., 53 Oliver St., Boston, Mass.
John Simmons Co., 104-10 Center St., New York, N. Y.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Henry Vogt Machine Co., Louisville, Ky. See page 5.
Carl H. Wagner, 1944 W. Albany Ave., Chicago, Ill
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.
York Manufacturing Co., York, Pa. See page 143.

"APPROVED!"



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GAUGES, Automatic Tank

Oil Conservation Engineering Co., Cleveland, Ohio. See page 4.

GAUGES, Draft

Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
American Schaeffer & Budenberg Corp., Berry & S. 5th St., Brooklyn, N. Y. See page 153.
Briggs Weaver Machinery Co., Dallas, Texas
The Bristol Co., Waterbury, Conn. See page 154.
Brown Instrument Co., 4537 Wayne Ave., Philadelphia, Pa.
Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Defender Automatic Regulator Co., 709 Pine St., St. Louis, Mo.
Lewis M. Ellison, 214 W. Kinzie St., Chicago, Ill.
Fort Worth Laboratories, 828½ Monroe St., Ft. Worth, Texas
Greene Brothers, Wichita Falls, Texas. See page 61.
Griebel Instrument Co., Carbondale, Pa.
Jos. W. Hays Corp., 1042 E. 8th St., Michigan City, Ind.
Paul B. Huyette Co., Inc., 5 South Eighteenth St., Philadelphia, Pa.
F. J. Low Co., Inc., 15 W. 44th St., New York, N. Y.
Meriam Co., 8405 Detroit Ave., Cleveland, Ohio
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Plouff Co., 170 Summer St., Boston, Mass.
Refinery Supply Co., Tulsa, Okla. See page 44.
Republic Flow Meters Co., 2236 Diversey Parkway, Chicago, Ill.
C. J. Tagliabue Mfg. Co., 18 33rd St., Brooklyn, N. Y. See page 49.
Taylor Instrument Co., Rochester, N. Y. See page 160.
Uehling Instrument Co., 475 Getty Ave., Paterson, N. J.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

GAUGES, Indicating

Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
American Schaeffer & Budenberg Corp., Berry & S. 5th St., Brooklyn, N. Y. See page 153.
Ashton Valve Co., 161 First St., Cambridge, Boston, Mass.
H. Belfield Co., 435 N. Broad St., Philadelphia, Pa.
Briggs Weaver Machinery Co., Dallas, Texas
Brooks Engineering Corp., 314 E. 12th St., Los Angeles, Calif.
Brown Instrument Co., 4537 Wayne Ave., Philadelphia, Pa.
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Greene Brothers, Wichita Falls, Texas. See page 61.
Griebel Instrument Co., Carbondale, Pa.
Jos. W. Hays Corp., 1042 E. 8th St., Michigan City, Ind.
F. J. Low Co., Inc., 15 W. 44th St., New York, N. Y.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
Meriam Co., 8405 Detroit Ave., Cleveland, Ohio
Metric Metal Works, Erie, Pa. See pages 70-71.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Gauge Co., 300 Pacific St., Brooklyn, N. Y.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Plouff Co., 170 Summer St., Boston, Mass.
Refinery Supply Co., Tulsa, Okla. See page 44.
Star Brass Mfg. Co., 53 Oliver St., Boston, Mass.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
C. J. Tagliabue Mfg. Co., 18 33rd St., Brooklyn, N. Y. See page 49.
Westcott & Gries, Inc., Tulsa, Okla. See page 15.
Western Gas Construction Co., Fort Wayne, Ind.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

GAUGES, Liquid Level

Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
American Schaeffer & Budenberg Corp., Berry & S. 5th St., Brooklyn, N. Y. See page 153.
Arctic Ice Machine Co., Canton, Ohio
Briggs Weaver Machinery Co., Dallas, Texas
The Bristol Co., Waterbury, Conn. See page 154.
Brooks Engineering Corp., 314 E. 12th St., Los Angeles, Calif.
Brown Instrument Co., 4537 Wayne Ave., Philadelphia, Pa.
Continental Supply Co., St. Louis, Missouri
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Essex Brass Corp., 200 Franklin St., Detroit, Mich.
The Esterline-Angus Co., P. O. Box 596, Indianapolis, Ind.
The Foxboro Co., Inc., Foxboro, Mass. See page 155.
Greene Brothers, Wichita Falls, Texas. See page 61.
Griebel Instrument Co., Carbondale, Pa
W. & L. E. Gurley, Troy, N. Y.
Lunkenheimer Co., Cincinnati, O. See page 17.
McRea & Roberts Co., 211 Campbell Ave., Detroit, Mich.
Metric Metal Works, Erie, Pa. See pages 70-71.
Michigan Lubricator Co., 3643 Beaubien St., Detroit, Mich.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Northern Tool Co., Inc., 806 Union St., Utica, N. Y.
Joseph Oat & Sons, 232 Quarry St., Philadelphia, Pa.
Oil Conservation Engineering Co., Cleveland, Ohio. See page 4.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Plouff Co., 170 Summer St., Boston, Mass.
Refinery Supply Co., Tulsa, Okla. See page 44.
Republic Flow Meters Co., 2236 Diversey Parkway, Chicago, Ill.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.

GAUGES, Low Pressure

The Forboro Co., Inc., Foxboro, Mass. See page 155.

GAUGES, Mercury Tank

American Schaeffer & Budenberg Corp., Berry & S. 5th St., Brooklyn, N. Y. See page 153.
Briggs Weaver Machinery Co., Dallas, Texas
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Greene Brothers, Wichita Falls, Texas. See page 61.
Griebel Instrument Co., Carbondale, Pa.
F. J. Low Co., Inc., 15 W. 44th St., New York, N. Y.
Metric Metal Works, Erie, Pa. See pages 70-71.
National Gauge Co., 300 Pacific St., Brooklyn, N. Y.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Plouff Co., 170 Summer St., Boston, Mass.
Refinery Supply Co., Tulsa, Okla. See page 44.

GAUGES, Oil

Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
American Lubricator Co., Detroit, Mich.
American Schaeffer & Budenberg Corp., Berry & S. 5th St., Brooklyn, N. Y. See page 153.
Barnhart-Davis Co., Warren, Pa.
W. N. Best Furnace & Burner Corp., 11 Broadway, New York, New York.
Briggs Weaver Machinery Co., Dallas, Texas
The Bristol Co., Waterbury, Conn. See page 154.
Brooks Engineering Corp., 314 E. 12th St., Los Angeles, Calif.
Brown Instrument Co., 4537 Wayne Ave., Philadelphia, Pa.
Continental Supply Co., St. Louis, Missouri
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Defender Automatic Regulator Co., 709 Pine St., St. Louis, Mo.
Detroit Lubricator Co., 5938 Trumbull Ave., Detroit, Mich.
Essex Brass Corp., 2000 Franklin St., Detroit, Mich.
Greene Brothers, Wichita Falls, Texas. See page 61.
Griebel Instrument Co., Carbondale, Pa.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Lunkenheimer Co., Cincinnati, O. See page 17.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
Metric Metal Works, Erie, Pa. See pages 70-71.
Michigan Lubricator Co., 3643 Beaubien St., Detroit, Mich.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Airoil Burner Co., 9th and Thompson Sts., Philadelphia, Pa. See page 20.
National Gauge Co., 300 Pacific St., Brooklyn, N. Y.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Joseph Oat & Sons, 232 Quarry St., Philadelphia, Pa.
Oil Well Supply Co., Pittsburgh, Pa.
Penberthy Injector Co., 340 Holden Ave., Detroit, Mich.
Plouff Co., 170 Summer St., Boston, Mass.
Wm. Powell Co., Cincinnati, Ohio
Refinery Supply Co., Tulsa, Okla. See page 44.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Western Gas Construction Co., Fort Wayne, Ind.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

GAUGES, Pressure

Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
The Alexander Milburn Co., 1416 W. Baltimore St., Baltimore, Md.
Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
American Schaeffer & Budenberg Corp., Berry & S. 5th St., Brooklyn, N. Y. See page 153.
Ashton Valve Co., 161 First St., Cambridge, Boston, Mass.
H. Belfield Co., 435 N. Broad St., Philadelphia, Pa.
Briggs Weaver Machinery Co., Dallas, Texas
The Bristol Co., Waterbury, Conn. See page 154.
The Burroughs Co., 246 N. Tenth St., Newark, N. J.
Carbondale Machine Co., Carbondale, Pa.
Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Defender Automatic Regulator Co., 709 Pine St., St. Louis, Mo.
Equitable Meter and Mfg. Co., 422-434-444 First Ave., Pittsburgh, Pa.
The Esterline-Angus Co., P. O. Box 596, Indianapolis, Ind.
The Foxboro Co. Inc., Foxboro, Mass. See page 55.
Greene Brothers, Wichita Falls, Texas. See page 61.
Griebel Instrument Co., Carbondale, Pa.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
F. J. Low Co., Inc., 15 W. 44th St., New York, N. Y.
Maintenance Eng. Corp., 1802 Conti St., Houston, Texas. See page 150.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
McDonough Coal Saving Corp'n., 3955 Grand River Ave., Detroit, Mich.
Meriam Co., 8405 Detroit Ave., Cleveland, Ohio
Metric Metal Works, Erie, Pa. See pages 70-71.
Modern Engineering Co., 3411-13 Pine Blvd., St. Louis, Mo. See Page 141.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
National Valve & Mfg. Co., 31st and Liberty, Pittsburgh, Pa.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Ocean Shore Iron Works, 550 Eighth St., San Francisco, Calif.
Oil Well Supply Co., Pittsburgh, Pa.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Plouff Co., 170 Summer St., Boston, Mass.
Refinery Supply Co., Tulsa, Okla. See page 44.
Republic Flow Meters Co., 2236 Diversey Parkway, Chicago, Ill.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Smiths Inventions, Inc., 2636 Fourth St., S.E., Minneapolis, Minn.
Star Brass Mfg. Co., 53 Oliver St., Boston, Mass.
C. J. Tagliabue Mfg. Co., 18 33rd St., Brooklyn, N. Y. See page 49.
Carl H. Wagner, 1944 W. Albany Ave., Chicago, Ill.
Walworth Company, 88 Pearl St., Boston, Mass.
Western Gas Construction Co., Fort Wayne, Ind.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

GAUGES, Safety

Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
Briggs Weaver Machinery Co., Dallas, Texas
Continental Supply Co., St. Louis, Missouri
Greene Brothers, Wichita Falls, Texas. See page 61.
Griebel Instrument Co., Carbondale, Pa.
Lunkenheimer Co., Cincinnati, O. See page 17.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Northern Tool Co., Inc., 806 Union St., Utica, N. Y.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Wm. Powell Co., Cincinnati, Ohio
Plouff Co., 170 Summer St., Boston, Mass.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

GAUGES, "U"

American Schaeffer & Budenberg Corp., Berry & S. 5th St., Brooklyn, N. Y. See page 153.
Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
Continental Supply Co., St. Louis, Missouri
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Davis Instrument Mfg. Co., 110 W. Fayette St., Baltimore, Md.
Defender Automatic Regulator Co., 709 Pine St., St. Louis, Mo.
Equitable Meter and Mfg. Co., 422-434-444 First Ave., Pittsburgh, Pa.
Fort Worth Laboratories, 828½ Monroe St., Ft. Worth, Texas. See page 158.
Greene Brothers, Wichita Falls, Texas. See page 61.
Griebel Instrument Co., Carbondale, Pa.
Jos. W. Hays Corp., 1042 E. 8th St., Michigan City, Ind.
Paul B. Huyette Co., Inc., 5 So. 18th St., Philadelphia, Pa.
F. J. Low Co., Inc., 15 W. 44th St., New York, N. Y.
Meriam Co., 8405 Detroit Ave., Cleveland, Ohio
Metric Metal Works, Erie, Pa. See pages 70-71.

Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Gauge Co., 300 Pacific St., Brooklyn, N. Y.
National Supply Co., Toledo, Ohio
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Oil Conservation Engineering Co., Cleveland. Ohio. See page 4.
Oil Well Supply Co., Pittsburgh, Pa.
Peden Iron & Steel Co., Houstor Texas. See page 85.
Plouff Co., 170 Summer St., Boston, Mass.
Precision Scientific Co., 820 S. Tripp Ave., Chicago, Ill.
Refinery Supply Co., Tulsa, Okla. See page 44.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

GAUGES, Vacuum Recording

Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
American Schaeffer & Budenberg Corp., Berry & S. 5th St., Brooklyn, N. Y. See page 153.
Ashton Valve Co., 161 First St., Cambridge, Boston, Mass.
Briggs Weaver Machinery Co., Dallas, Texas
The Bristol Co., Waterbury, Conn. See page 154.
Brown Instrument Co., 4537 Wayne Ave., Philadelphia, Pa.
Continental Supply Co., St. Louis, Missouri
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Defender Automatic Regulator Co., 709 Pine St., St. Louis, Mo.
Equitable Meter and Mfg. Co., 422-434-444 First Ave., Pittsburgh, Pa.
The Esterline-Angus Co., P. O. Box 596, Indianapolis, Ind.
Fort Worth Laboratories, 828½ Monroe St., Ft. Worth, Texas. See page 158.
Greene Brothers, Wichita Falls, Texas. See page 61.
Griebel Instrument Co., Carbondale, Pa.
Maintenance Eng. Corp., 1802 Conti St., Houston, Texas. See page 150.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
Metric Metal Works, Erie, Pa. See pages 70-71.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Oil Well Supply Co., Pittsburgh, Pa.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Plouff Co., 170 Summer St., Boston, Mass.
Refinery Supply Co., Tulsa, Okla. See page 44.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Star Brass Mfg. Co., 53 Oliver St., Boston, Mass.
C. J. Tagliabue Mfg. Co., 18 33rd St., Brooklyn, N. Y. See page 49.
Uehling Instrument Co., 475 Getty Ave., Paterson, N. J.
Westcott & Gries, Inc., Tulsa, Okla.. See page 15.
Woodward, Wight & Co., Ltd.. New Orleans, La. See page 153.

GAUGES, Water

American Lubricator Co., Detroit, Mich.
H. Belfield Co., 435 N. Broad St., Philadelphia, Pa.
Briggs Weaver Machinery Co., Dallas, Texas
The Bristol Co., Waterbury, Conn. See page 154.
Brown Instrument Co., 4537 Wayne Ave., Philadelphia, Pa.
Continental Supply Co., St. Louis, Mo.
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Davis Instrument Mfg. Co., 110 W. Fayette St., Baltimore, Md.
Defender Automatic Regulator Co., 709 Pine St., St. Louis, Mo.
Detroit Lubricator Co., 5938 Trumbull Ave., Detroit, Mich.
Erie City Iron Works, Erie, Pa.
Equitable Meter and Mfg. Co., 422-434-444 First Ave., Pittsburgh, Pa.
Essex Brass Corp., 2000 Franklin St., Detroit, Mich.
Greene Brothers, Wichita Falls, Texas. See page 61.
Griebel Instrument Co., Carbondale, Pa.
Heine Boiler Co., St. Louis, Mo.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Paul B. Huyette Co., Inc., 5 So. 18th St., Philadelphia, Pa.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
F. J. Low Co., Inc., 15 W. 44th St., New York, N. Y.
Lunkenheimer Co., Cincinnati, O. See page 17.
Marion Machine, Foundry & Supply Co., Box 685, Marion, Ind.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
McRea & Roberts Co., 211 Campbell Ave., Detroit, Mich.
Michigan Lubricator Co., 3643 Blanbien St., Detroit, Mich.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Northern Tool Co., Inc., 806 Union St., Utica, N. Y.
Joseph Oat & Sons, 232 Quarry St., Philadelphia, Pa.
Ocean Shore Iron Works, 550 Eighth St., San Francisco, Cal.f.
Ohio Injector Co., S. Main St., Wadsworth, Ohio.
Oil Well Supply Co., Pittsburgh, Pa.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Penberthy Injector Co., 340 Holden Ave., Detroit, Mich.
Pitts & Kitts Mfg. & Supply Co., 91 7th Ave., New York, N. Y.
Plouff Co., 170 Summer St., Boston, Mass.
Wm. Powell Co., Cincinnati, Ohio
Refinery Supply Co., Tulsa, Okla. See page 44.
Roberts Steam Specialty Co., 5318 St. Clair Ave., Cleveland, Ohio
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Simplex Valve & Meter Co., 2005 S 68th St., Philadelphia, Pa.
Star Brass Mfg. Co., 53 Oliver St., Boston, Mass.
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
Union Iron Works, Selma, Ala.
Walworth Company, 88 Pearl St., Boston, Mass.
William Gauge Co., 543 Fourth Ave., Pittsburgh, Pa.
D. T. Williams Valve Co., Spring Grove Ave. & Township St., Cincinnati, Ohio. See page 35.
Wright Austin Co., 315 W. Woodbridge, Detroit. Mich.
Woodward, Wight & Co., Ltd.. New Orleans, La. See page 153.

GAUGES. Water Level

The Bristol Co., Waterbury, Conn. See page 154.

GAUGE GLASSES

The Alexander Milburn Co., 1416 W. Baltimore St., Baltimore, Md.
American Lubricator Co., Detroit, Mich.
Anchor Packing Co., Lafayette Bldg., Philadelphia, Pa.
Barnhart-Davis Co., Warren, Pa.
H. Belfield Co., 435 N. Broad St., Philadelphia, Pa.
Briggs Weaver Machinery Co., Dallas, Texas
Stewart R. Browne Mfg. Co., New York, N. Y.
Cincinnati Gasket & Packing Co., 1546-48 Elm St., Cincinnati, O.
Continental Supply Co., St. Louis, Missouri
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Defender Automatic Regulator Co., 709 Pine St., St. Louis, Mo.
Equitable Meter and Mfg. Co., 422-434-444 First Ave., Pittsburgh, Pa.
Erie City Iron Works, Erie, Pa.
Essex Brass Corp., 2000 Franklin St., Detroit, Mich.
Garlock Packing Co., 50 Main St., Palmyra, N. Y. See page 67.
Greene Brothers, Wichita Falls, Texas. See page 61.
Griebel Instrument Co., Carbondale, Pa.
Heine Boiler Co., St. Louis, Mo.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Paul B. Huyette Co., Inc., 5 So. 18th St., Philadelphia, Pa.
Illinois Glass Co., Alton, Ill.
Jenkins Bros., 80 White St., New York, N. Y.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
F. J. Low Co., Inc., 15 W. 44th St., New York, N. Y.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
McRea & Roberts Co., 211 Campbell Ave., Detroit, Mich.
Meriam Co., 8405 Detroit Ave., Cleveland, Ohio
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Joseph Oat & Sons, 232 Quarry St., Philadelphia, Pa.
Ocean Shore Iron Works, 550 Eighth St., San Francisco, Cal.f.
Ohio Injector Co., S. Main St., Wadsworth, Ohio.
Oil Well Supply Co., Pittsburgh, Pa.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Penberthy Injector Co., 340 Holden Ave., Detroit, Mich.
Pitts & Kitts Mfg. & Supply Co., 91 7th Ave., New York, N. Y.
Plouff Co., 170 Summer St., Boston, Mass.
Wm. Powell Co., Cincinnati, Ohio
Refinery Supply Co., Tulsa, Okla. See page 44.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
John Simmons Co., 104-10 Center St., New York, N. Y.
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
Texas Belting Co., Houston, Texas.
Union Iron Works, Selma, Ala.
Carl H. Wagner, 1944 W. Albany Ave., Chicago, Ill.
Walworth Company, 88 Pearl St., Boston, Mass.
William Gauge Co., 543 Fourth Ave., Pittsburgh, Pa.
Woodward, Wight & Co., Ltd.. New Orleans, La. See page 153.

GEARS

Aldrich Pump Co., Foot of Pine St., Allentown, Pa.
Babcock-Wilcox and Goldie-McCulloch, Ltd., Galt, Ontario, Canada
Bethlehem Steel Co., Bethlehem, Pa.
Briggs Weaver Machinery Co., Dallas, Texas
A. & F. Brown Co., 79 Barclay St., New York, N. Y.
Chicago Rawhide Mfg. Co., 1273 Elston Ave., Chicago, Ill.
Colburn Gear & Mfg. Co., 98 Holmes St., Norfolk Downs, Mass.
De Laval Steam Turbine Co., Trenton, N. J. See page 123.
DeSoto Foundry & Machine Co., Mansfield. La.
The Falk Corporation, Milwaukee, Wisconsin.
Hartwell Iron Works, Houston, Texas
The Hill Clutch Machine & Foundry Co., Cleveland, Ohio
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Jeffrey Mfg. Co., 904-99 No. Fourth St., Columbus, Ohio.
Jones, W. A., Foundry & Machine Co., 4415 W. Roosevelt Road, Chicago, Illinois
Mesta Machine Co., Pittsburgh, Pa.
Moloch Co., Kaukauna, Wis.
Morse Chain Co., Ithaca, N. Y.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond. Va.
Union Engineering Co., Cleveland, Ohio.
Union Iron Works, Selma. Ala.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Western Iron & Foundry Co., Wichita, Kansas. See page 89.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

GEARS, Reduction

The Brady Conveyors Corp., 20 W. Jackson Blvd., Chicago, Ill.
Briggs Weaver Machinery Co., Dallas, Texas
A. & F. Brown Co., 79 Barclay St., New York, N. Y.
Carling Turbine Blower Co., Inc., 104 Harding St., Worcester, Mass.
Colburn Gear & Mfg. Co., 98 Holmes St., Norfolk Downs, Mass.
De Laval Steam Turbine Co., Trenton, N. J. See page 123.
The Falk Corporation, Milwaukee, Wisconsin.
Hoist & Crane Eng. Co., New York, N. Y.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Jones, W. A., Foundry & Machine Co., 4415 W. Roosevelt Road, Chicago, Illinois
Mesta Machine Co., Pittsburgh, Pa.
Morse Chain Co., Ithaca, N. Y.
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
Terry Steam Turbine Co., Hartford, Conn.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

GENERATING SETS, Electric

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Louis Allis Co., 133 Stewart St., Milwaukee, Wis.
Carling Turbine Blower Co., Inc., 104 Harding St., Worcester, Mass.
Charter Gas Engine Co., Sterling, Illinois.
Cook Motor Co., Delaware, Ohio.
Cooper, C. & G., Co. Mt. Vernon, Ohio. See pages 30-31.
Cutler-Hammer Mfg. Co., Milwaukee, Wis.
De Laval Steam Turbine Co., Trenton, N. J. See page 123.
Engberg's Electric & Mechanical Works, 268 Vine St., St. Joseph, Mich.
Fairbanks, Morse & Co., 900 S. Wabash Ave., Chicago, Ill.
Fidelity Electric Co., 331 No. Arch St., Lancaster, Pa.
A. D. Granger Co., 15 Park Row, New York, N. Y.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Houston Armature Works, Houston, Texas
Maintenance Co., Inc., 449-53 W. Forty-Second St., N. Y., N. Y.
The Pyle-National Co., Chicago, Ill.
The Randle Machinery Co., 1723 Power St., Cincinnati, Ohio
Ridgway, Dynamo & Engine Co., Ridgway, Pa.
Rochester Electric Products Corp., 640 Driving Park Ave., Rochester, N. Y.
Roth Bros. & Co., 1400 W. Adams St., Chicago, Ill
Tennant Co., Union National Bank Bldg., Houston, Texas.
Triumph Electric Co., Cincinnati, Ohio
B. A. Wesche Electric Co., 1628 Vine St., Cincinnati, Ohio
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

GENERATORS

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Louis Allis Co., 133 Stewart St., Milwaukee, Wis.
Carbic Mfg. Co., Duluth, Minn.
Carbondale Machine Co., Carbondale, Pa.
Carling Turbine Blower Co., Inc., 104 Harding St., Worcester, Mass.
Continental Supply Co., St. Louis, Missouri
Crocker-Wheeler Electric Mfg. Co., Ampere, N. J.
Engberg's Electric & Mechanical Works, 268 Vine St., St. Joseph, Mich.
Fidelity Electric Co., 331 No. Arch St., Lancaster, Pa.
General Electric Co., Schenectady, New York
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Houston Armature Works, Houston, Texas

The Randle Machinery Co., 1723 Power St., Cincinnati, Ohio
Rochester Electric Products Corp., 640 Driving Park Ave., Rochester, N. Y.
Roth Bros. & Co., 1400 W. Adams St., Chicago, Ill
Southern Engine & Pump Co., Houston, Texas
Triumph Electric Co., Cincinnati, Ohio
B. A. Wesche Electric Co., 1628 Vine St., Cincinnati, Ohio
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

GENERATORS—D. C. & A. C.
Roth Bros. & Co., 1400 W. Adams St., Chicago, Ill

GENERATORS, Divertes Pole
Rochester Electric Products Corp., 640 Driving Park Ave., Rochester, N. Y.

GENERATORS, Gas
American Gas Construction Co., Newton, Iowa

GENERATORS, Ammonia Gas
Carbondale Machine Co., Carbondale, Pa.
Henry Vogt Machine Co., Louisville, Ky. See page 5.
York Manufacturing Co., York, Pa. See page 143.

GENERATORS, Motor
Roth Bros. & Co., 1400 W. Adams St., Chicago, Ill

GENERATORS, Turbo
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Briggs Weaver Machinery Co., Dallas, Texas
Crocker-Wheeler Electric Mfg. Co., Ampere, N. J.
De Laval Steam Turbine Co., Trenton, N. J. See page 123.
Elliott Company, Jeannette, Pa. See page 161.
Houston Armature Works, Houston, Texas
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.
Oil Well Supply Co., Pittsburgh, Pa.
The Pyle-National Co., Chicago, Ill.
The Randle Machinery Co., 1723 Power St., Cincinnati, Ohio
Ridgway, Dynamo & Engine Co., Ridgway, Pa.
Standard Turbine Corp., Wellsville, N. Y.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

GENERATORS, Welding
Air Reduction Sales Co., 342 Madison Ave., New York, N. Y.
The Alexander Milburn Co., 1416 W. Baltimore St., Baltimore, Md.
Brazelton, Wessendorff & Nelms, Houston, Texas
Briggs Weaver Machinery Co., Dallas, Texas
Carbic Mfg. Co., Duluth, Minn.
Houston Armature Works, Houston, Texas
MacLeod Company, Cincinnati, Ohio
Oxweld Acetylene Co., Long Island City, L. I. N. Y.
Plouff Co., 170 Summer St., Boston, Mass.
Smiths Inventions, Inc., 2636 Fourth St., S.E., Minneapolis, Minn.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.

GOGGLES
The Alexander Milburn Co., 1416 W. Baltimore St., Baltimore, Md.
Brazelton, Wessendorff & Nelms, Houston, Texas
Burdett Mfg. Co., 309 St. Johns Court, Chicago, Ill.
Thos. H. Dallett Co., 165-89 W. Clearfield St., Philadelphia, Pa.
Improved Alluminum Gaso Protector Co., 7216 Ridge Blvd., Chicago, Ill.
Mine Safety Appliance Co., 908-12 Chamber of Commerce Bldg., Pittsburgh, Pa. See page 162.
National Oxygen Co., 5811 W. 66th St., Chicago, Ill.
Oxweld Acetylene Co., Long Island City, L. I. N. Y.
Refinery Supply Co., Tulsa, Okla. See page 44.
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
Smiths Inventions, Inc., 2636 Fourth St., S.E., Minneapolis, Minn.

GOVERNORS
Briggs Weaver Machinery Co., Dallas, Texas
A. W. Cash Co., 3rd & Eldorado Sts., Decatur, Ill.
The Chaplin-Fulton Co., 28 Penn Ave., Pittsburgh, Pa.
Fisher Governor Co., Marshalltown, Iowa. See page 81.
Gardner-Governor Co., Quincy, Ill.
Greene Brothers, Wichita Falls, Texas. See page 61.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Judson Governor Co., Rochester, New York.
McAlear Mfg. Co., 1901-07 S. Western Ave., Chicago, Ill.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
National Supply Co., Toledo, Ohio
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Oil Well Supply Co., Pittsburgh, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
The Pickering Governor Co., Portland, Conn.
The P. H. & F. M. Roots Co., Connersville, Ind. See inside front cover.
"S-C" Regulator Mfg. Co., Fostoria, Ohio.
The Stanwood Corp., Cincinnati, O.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Walworth Company, 88 Pearl St., Boston, Mass.
Wilgus Mfg. Co., 1732 E. Sixteenth St., Los Angeles, Calif.
G. E. Witt Co., Inc., 862-64 Howard St., San Francisco, Calif.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.

GOVERNORS, Boiler Feed
Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
Boylston Steam Specialty Co., 116 W. Illinois St., Chicago, Ill.
Briggs Weaver Machinery Co., Dallas, Texas
The Chaplin-Fulton Co., 28 Penn Ave., Pittsburgh, Pa. See page 159.
Defender Automatic Regulator Co., 709 Pine St., St. Louis, Mo.
Fisher Governor Co., Marshalltown, Iowa. See page 81.
Gardner-Governor Co., Quincy, Ill.
Greene Brothers, Wichita Falls Texas. See page 61.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Paul B. Huyette Co., Inc., 5 South Eighteenth St., Philadelphia, Pa
Kelley & Mueller, Inc., 34 W Thirteenth St., New York, N. Y.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
Mason Regulator Co., Milton, Mass
McAlear Mfg. Co., 1901-07 S. Western Ave., Chicago, Ill.
McDonough Coal Saving Corp'n., 3955 Grand River Ave., Detroit, Mich.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Plouff Co., 170 Summer St., Boston, Mass.
"S-C" Regulator Mfg. Co., Fostoria, Ohio.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Stickle Steam Specialties Co., Indianapolis, Ind.
C. J. Tagliabue Mfg. Co., 18 33rd St., Brooklyn, N. Y. See page 49.
Tennant Co., Union National Bank Bldg., Houston, Texas.
Union Iron Works, Selma, Ala.
Walworth Company, 88 Pearl St., Boston, Mass.
Wilgus Mfg. Co., 1732 E. Sixteenth St., Los Angeles, Calif.
William Gauge Co., 543 Fourth Ave., Pittsburgh, Pa.
G. E. Witt Co., Inc., 862-64 Howard St., San Francisco, Calif.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.
Wright Austin Co., 315 W. Woodbridge, Detroit, Mich.

GOVERNORS, Burner
G. E. Witt Co., Inc., 862-64 Howard St., San Francisco, Calif.

GOVERNORS, Engine
Waters Governor Co., 141 Milk St., Boston, Mass.

GOVERNORS, Gas
Briggs Weaver Machinery Co., Dallas, Texas
The Chaplin-Fulton Co., 28 Penn Ave., Pittsburgh, Pa. See page 159.
Fisher Governor Co., Marshalltown, Iowa. See page 81.
Gardner-Governor Co., Quincy, Ill.
Greene Brothers, Wichita Falls, Texas. See page 61.
Judson Governor Co., Rochester, New York.
McAlear Mfg. Co., 1901-07 S. Western Ave., Chicago, Ill.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
The P. H. & F. M. Roots Co., Connersville, Ind. See inside front cover.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Wilgus Mfg. Co., 1732 E. Sixteenth St., Los Angeles, Calif.
G. E. Witt Co., Inc., 862-64 Howard St., San Francisco, Calif.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.

GOVERNORS, Pump
Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
Atlas Valve Co., 282 South St., Newark, N. J.
Bowser, S. F., & Co., Inc., 1230 Bowser Ave., Fort Wayne, Ind.
Boylston Steam Specialty Co., 116 W. Illinois St., Chicago, Ill.
Briggs Weaver Machinery Co., Dallas, Texas
A. W. Cash Co., 3rd & Eldorado Sts., Decatur, Ill.
The Chaplin-Fulton Co., 28 Penn Ave., Pittsburgh, Pa. See page 159.
Defender Automatic Regulator Co., 709 Pine St., St. Louis, Mo.
C. A. Dunham Co., The Dunham Bldg., 450 E. Ohio St., Chicago, Illinois
Julian d'Este Co., 26 Canal St., Boston, Mass.
Fisher Governor Co., Marshalltown, Iowa. See page 81.
Gardner-Governor Co., Quincy, Ill.
Greene Brothers, Wichita Falls, Texas. See page 61.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Paul B. Huyette Co., Inc., 5 So. 18th St., Philadelphia, Pa.
Jarecki Mfg. Co., Erie, Pa.
Kelley & Mueller, Inc., 34 W. Thirteenth St., New York, N. Y.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
Mason Regulator Co., Milton, Mass.
McAlear Mfg. Co., 1901-07 S. Western Ave., Chicago, Ill.
McDonough Coal Saving Corp'n., 3955 Grand River Ave., Detroit, Mich.
National Supply Co., Toledo, Ohio
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Plouff Co., 170 Summer St., Boston, Mass.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
"S-C" Regulator Mfg. Co., Fostoria, Ohio.
C. E. Squires Co., E. Fortieth St. & Kelley Ave., Cleveland, Ohio.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
C. J. Tagliabue Mfg. Co., 18 33rd St., Brooklyn, N. Y.
Tennant Co., Union National Bank Bldg., Houston, Texas.
Thermal Efficiency Co., 1210 Scarritt Bldg., Kansas City, Mo. See page 113.
Waters Governor Co., 141 Milk St., Boston, Mass.
Watson & McDaniel Co., 146 N. Seventh St., Philadelphia, Pa.
Watts Regulator Company, 250-252 Lowell St., Lawrence, Mass.
Wilgus Mfg. Co., 1732 E. Sixteenth St., Los Angeles, Calif.
William Gauge Co., 543 Fourth Ave., Pittsburgh, Pa.
G. E. Witt Co., Inc., 862-64 Howard St., San Francisco, Calif.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.
Wright Austin Co., 315 W. Woodbridge, Detroit, Mich.

GRAPHITE, Amorphores
Detroit Graphite Co. of Texas, 1506 2nd Nat. Bk. Bldg., Houston, Texas. See page 11.

GRAPHITE, Boiler
Detroit Graphite Co. of Texas, 1506 2nd Nat. Bk. Bldg., Houston, Texas. See page 11.

GRAPHITE, Flake
Detroit Graphite Co. of Texas, 1506 2nd Nat. Bk. Bldg., Houston, Texas. See page 11.

GRATES
Babcock-Wilcox and Goldie-McCulloch, Ltd., Galt, Ontario, Canada
Barnhart-Davis Co., Warren, Pa.
Brass Foundry & Machine Co., Fort Wayne, Ind.
Briggs Weaver Machinery Co., Dallas, Texas
The Brownell Co., Dayton, Ohio
Burke Engineering Co., Holland, Mich.
Chattanooga Boiler & Tank Co., Box 316, Chattanooga, Tenn.
DeSoto Foundry & Machine Co., Mansfield, La.
D. M. Dillon Steam Boiler Works, Fitchburg, Mass.
T. F. Downey Boiler Works, 2600-10 W. Grand Ave., Chicago, Ill.
Erie City Iron Works, Erie, Pa.
A. D. Granger Co., 15 Park Row, New York, N. Y.
Hartwell Iron Works, Houston, Texas
Heine Boiler Co., St. Louis, Mo.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Hulson Grate Co., Keokuk, Iowa
Ideal Foundry & Machinery Co., Beaver Falls, Pa.
Kansas City Structural Steel Co., Kansas City, Kansas.
Lamprey Co., Westfield, Mass.
E. Leonard & Sons, Ltd., York St., London, Canada.
Marion Machine, Foundry & Supply Co., Box 685, Marion, Ind.
McEwen Bros., Wellsville, N. Y.
Milwaukee Boiler Mfg. Co., 35th St. & National Ave., Milwaukee, Wis.
Myerston Foundry & Mfg. Co., 90 West St., New York, N. Y.
New England Roller Grate Co., Indian Orchard, Mass.
Nute, McGehee, Geary Co., Chambersburg, Pa.
Ocean Shore Iron Works, 550 Eighth St., San Francisco, Calif.
Pyramid Iron Products Corp., 136 Liberty St., Ne York, N. Y.
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
Shear-Klean Grate Co., 810 Monadnock Bldg., Chicago, Ill.
Sprague Foundry & Mfg. Co., P. O. Box 334, Council Bluffs, Iowa
The Stanwood Corp., Cincinnati, O.
M. H. Treadwell Co. of Ill., 208 S. La Salle St., Chicago, Ill.
Union Iron Works, Selma, Ala.
Western Iron & Foundry Co., Wichita, Kansas.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

GRATINGS, Floor
Barnhart-Davis Co., Warren, Pa.
Fort Worth Steel & Machinery Co., Fort Worth, Texas
A. D. Granger Co., 15 Park Row, New York, N. Y.
Hendrick Mfg. Co., Carbondale, Pa.
Ideal Foundry & Machine Co., Beaver Falls, Pa.
Kansas City Structural Steel Co., Kansas City, Kansas.
McDougall & Potter Co., 141st & Rider Ave., New York, N. Y.
Nute, McGehee, Geary Co., Chambersburg, Pa.
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.

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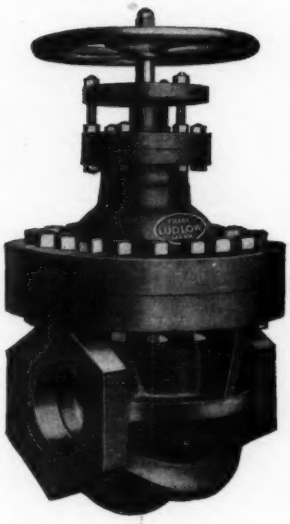

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Tips Foundry & Machine Co., Austin, Texas
Union Iron Works, Selma, Ala.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Western Gas Construction Co., Fort Wayne, Ind.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

GRINDERS

Brazelton, Wessendorff & Nelms, Houston, Texas
Briggs Weaver Machinery Co., Dallas, Texas
A. & F. Brown Co., 79 Barclay St., New York, N. Y.
Canedy-Otto Mfg. Co., Chicago Heights, Ill.
Champion Blower & Forge Co., Lancaster, Pa.
Chicago Pneumatic Tool Co., 6 E. 44th St., New York, N. Y.
Jas. Clark, Jr., Electric Co., 600 E. Bergman St., Louisville, Ky.
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Gisholt Machine Co., Madison, Wis.
Goodell-Pratt Co., 57 Wells St., Greenfield, Mass.
Hall & Brown Wood Working Machine Co., Broadway, Tyler & Ninth Sts., St. Louis, Mo.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Premier Mill Corporation, Geneva New York.
Joseph T. Ryerson & Sons, 2558 W. 16th St., Chicago, Ill.
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
Sprague Foundry & Mfg. Co., P. O. Box 334, Council Bluffs, Iowa
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153

GRINDERS, Chaser

Briggs Weaver Machinery Co., Dallas, Texas
Landis Machine Company, Waynesboro, Pa.
Standard Engineering Co., Ellwood City, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

GRINDERS, Electric

May Machinery Co., Second National Bank Bldg., Houston, Tex.

GRINDERS, Pneumatic

May Machinery Co., Second National Bank Bldg., Houston, Tex.

GUARDS, Machinery

Columbia Fence & Wire Co., Dallas, Texas

GUARDS, Window

Columbia Fence & Wire Co., Dallas, Texas

H

HACKSAWS

Brazelton, Wessendorff & Nelms, Houston, Texas
Briggs Weaver Machinery Co., Dallas, Texas
Champion Blower & Forge Co., Lancaster, Pa.
Jas. Clark, Jr., Electric Co., 600 E. Bergman St., Louisville, Ky.
Continental Supply Co., St. Louis, Missouri
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Goodell-Pratt Co., 57 Wells St., Greenfield, Mass.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
Oil Well Supply Co., Pittsburgh, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Petroleum Supply Co., Houston, Texas
Joseph T. Ryerson & Sons, 2558 W. 16th St., Chicago, Ill.
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
John Simmons Co., 104-10 Center St., New York, N. Y.
The L. S. Starrett Co., Athol, Mass.
Texas Belting Co., Houston, Texas.
Union Iron Works, Selma, Ala.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

HAMMERS

Brazelton, Wessendorff & Nelms, Houston, Texas
Briggs Weaver Machinery Co., Dallas, Texas
Continental Supply Co., St. Louis, Missouri
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Chicago Pneumatic Tool Co., 6 E. 44th St., New York, N. Y.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
Moloch Co., Kaukauna, Wis.
National Supply Co., Toledo, Ohio
Peden Iron & Steel Co., Houston, Texas. See page 85.
Petroleum Supply Co., Houston, Texas
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
John Simmons Co., 104-10 Center St., New York, N. Y.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

HAMMERS, Pneumantic

Brazelton, Wessendorff & Nelms, Houston, Texas
Briggs Weaver Machinery Co., Dallas, Texas
Canton Pneumatic Co., Canton Ohio.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Ingersoll-Rand Co., 11 Broadway, New York, N. Y.
May Machinery Co., Second National Bank Bldg., Houston, Tex.
National Supply Co., Toledo, Ohio
Peden Iron & Steel Co., Houston, Texas. See page 85.
Joseph T. Ryerson & Sons, 2558 W 16th St., Chicago, Ill.
Tennant Co., Union National Bank Bldg., Houston, Texas.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

HAMMERS, Pneumatic Chipping and Cauling

King Pneumatic Tool Co., 1733 Armitage Ave., Chicago, Ill.

HAMMERS, Power

Moloch Co., Kaukauna, Wis.

HAMMERS, (Rawhide)

Chicago Rawhide Mfg. Co., 1273 Elston Ave., Chicago, Ill.

HAND-HOLES

Glasgow Iron Co., Pottstown, Pa.

HANGERS, Shaft

Briggs Weaver Machinery Co., Dallas, Texas
Continental Supply Co., St. Louis, Missouri
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Falls Clutch & Machinery Co., Cuyahoga Falls, Ohio.
Barnhart-Davis Co., Warren, Pa.
Horton Machine Works, 4th and Magee St., Elmyra, N. Y.
Jones, W. A., Foundry & Machine Co., 4415 W. Roosevelt Road, Chicago, Illinois
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
National Supply Co., Toledo, Ohio
Peden Iron & Steel Co., Houston Texas. See page 85.
A. R. Purdy Co., Inc., 790-4 Greenwich St., New York, N. Y.
John Simmons Co., 104-10 Center St., New York, N. Y.
Union Iron Works, Selma, Ala.
T. B. Wood's Sons Co., Chambersburg, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

HARDWARE

Briggs Weaver Machinery Co., Dallas, Texas
Continental Supply Co., St. Louis, Missouri
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Lawrence Brothers, Sterling, Ill.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
Oil Well Supply Co., Pittsburgh, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Petroleum Supply Co., Houston, Texas
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
Walworth Company, 88 Pearl St., Boston, Mass.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

HEADS, Condenser

American Brass Co., Waterbury, Conn.
Barnhart-Davis Co., Warren, Pa.
Elliott Company, Jeannette, Pa. See page 101.
Tennant Co., Union National Bank Bldg., Houston, Texas.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

HEADS, Exhaust

Barnhart-Davis Co., Warren, Pa.
Boylston Steam Specialty Co., 116 W. Illinois St., Chicago, Ill.
Briggs Weaver Machinery Co., Dallas, Texas
Burt Mfg. Co., Akron, Ohio.
Hoppes Mfg. Co., 19 Larch St., Springfield, Ohio.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Kelley & Mueller, Inc., 34 W. Thirteenth St., New York, N. Y.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
McAlear Mfg. Co., 1901-07 S. Western Ave., Chicago, Ill.
Milwaukee Steam Appliance Co., West Allis, Wis.
National Supply Co., Toledo, Ohio
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
H. A. Paine Co., 419-20 Cotton Exchange Bldg., Houston, Texas.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Plouff Co., 170 Summer St., Boston, Mass.
John Simmons Co., 104-10 Center St., New York, N. Y.
The Swartwout Co., 18525 Euclid Ave., Cleveland, Ohio.
Tennant Co., Union National Bank Bldg., Houston, Texas.
Walworth Company, 88 Pearl St., Boston, Mass.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

HEADS, Flanged and Dished

Worth Steel Co., Calymont, Delaware.

HEADERS

Barnhart-Davis Co., Warren, Pa.
Briggs Weaver Machinery Co., Dallas, Texas
T. F. Downey Boiler Works, 2600-10 W. Grand Ave., Chicago, Ill.
Harrisburg Pipe & Pipe Bending Co., Houston, Texas
Hershey Machine & Foundry Co., Manheim, Pa.
Hughes Tool Co., 300 Hughes St., Houston, Texas. See insert.
National Pipe Bending Co., New Haven, Conn.
National Supply Co., Toledo, Ohio
National Valve & Mfg. Co., 31st and Liberty, Pittsburgh, Pa.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Petroleum Iron Works, Sharon, Pa.
Pittsburgh Pipe Coil & Bending Co., 61 Bridge St., Etna, Pa.
Shaw-Kendall Engineering Company, 120-130 S. Superior St., Toledo, Ohio
Standard Piping & Fittings Co., 13th and Race Sts., Philadelphia, Pa.
Union Iron Works, Selma, Ala.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Henry Vogt Machine Co., Louisville, Ky. See page 5.
Walworth Company, 88 Pearl St., Boston, Mass.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

HEADERS, Welded

Carbondale Machine Co., Carbondale, Pa.
Harrisburg Pipe & Pipe Bending Co., Houston, Texas
Hartwell Iron Works, Houston, Texas
McAleenan Bros. Co., Twenty-fifth and Railroad, Pittsburgh, Pa.
Midwest Piping & Supply Co., Second & Miller Sts., St. Louis, Mo. See page 41.
W. K. Mitchell & Co., Inc., Ellsworth St. & Schuylkill River. Philadelphia, Pa.
National Pipe Bending Co., New Haven, Conn.
National Supply Co., Toledo, Ohio
National Valve & Mfg. Co., 31st and Liberty, Pittsburgh, Pa.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Petroleum Iron Works, Sharon, Pa.
Pittsburgh Pipe Coil & Bending Co., 61 Bridge St., Etna, Pa.
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
Shaw-Kendall Engineering Company, 120-130 S. Superior St., Toledo, Ohio
Standard Piping & Fittings Co., 13th and Race Sts., Philadelphia, Pa.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Henry Vogt Machine Co., Louisville, Ky. See page 5.
Walworth Company, 88 Pearl St., Boston, Mass.
Whitlock Coil Pipe Co., Hartford, Conn.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.
York Manufacturing Co., York, Pa. See page 143.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

HEATERS

The American Blower Co., 6004 Russell, Detroit, Mich.
C. F. Braun & Co., Alhambra, Cal. See pages 78-79.
The Cochrane Corp., 3130 N. 17th St., Philadelphia, Pa.
Croll-Reynolds Eng'rg. Co., Inc., 95 Liberty St., New York, N. Y.
Dean E. Foster, New Wright Bldg., Tulsa, Okla.
Griscom-Russell Co., 285 Madison Ave., New York, N. Y. See page 133.
Arthur G. McKee & Co., 2422 Euclid Ave., Cleveland, Ohio
National Supply Co., Toledo, Ohio
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Philadelphia Coppersmithing Co., 222 N. Front St., Philadelphia, Pa.
Ross Heater & Mfg. Co., Inc., Buffalo, N. Y.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Schutte & Koerting Co., 1165 Thompson St., Philadelphia, Pa. See page 149.
Sims Co., Erie, Pa.
Sowers Mfg. Co., 1294 Niagara St., Buffalo, N. Y.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Thermal Efficiency Co., 1210 Scarritt Bldg., Kansas City, Mo. See page 113.
Whitlock Coil Pipe Co., Hartford, Conn.
The Widdell Engineering Co., 512 American Bk. Bldg., Kansas City, Mo.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

HEATERS, Air

The Air Preheater Corp., 25 Broadway, New York, N. Y.
Babcock & Wilcox Co., 85 Liberty St., New York, N. Y.

The Badenhausen Corp., 1011 Chestnut St., Philadelphia, Pa.
Bayley Mfg. Co., 73z Greenbush St., Milwaukee, Wis.
The Calorizing Co., Wilkinsburg, Pa.
Croll-Reynolds Eng'rg. Co., Inc., 95 Liberty St., New York, N. Y.
Eclipse Fuel Engineering Co., Rockford, Ill.
Elliott Company, Jeannette, Pa. See page 101.
Griscom-Russell Co., 285 Madison Ave., New York, N. Y. See page 133.
MacLeod Company, Cincinnati, Ohio
Maxon Premix Burner Co., Muncie, Ind.
Peden Iron & Steel Co., Houston Texas. See page 85.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Schutte & Koerting Co., 1165 Thompson St., Philadelphia, Pa. See page 149.
Stickle Steam Specialties Co., Indianapolis, Ind.
Tennant Co., Union Nafional Bank Bldg., Houston, Texas.

HEATERS, Electric

Carleton Mace Engr. Co., 244 Dover St., Boston, Mass.
Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
Cutler-Hammer Mfg. Co., Milwaukee, Wis.
George J. Hagan Co., Chamber of Commerce Bldg., Pittsburgh, Pa.
Langstadt-Meyer Co., Appleton, Wis.
Refinery Supply Co., Tulsa, Okla. See page 44.
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

HEATERS, Feed Water

Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
Babcock-Wilcox and Goldie-McCulloch, Ltd., Galt, Ontario, Canada
Bethlehem Shipbuilding Corp., Bethlehem, Pa.
Brass Foundry & Machine Co., Fort Wayne, Ind.
C. F. Braun & Co. Alhambra, Cal. See pages 78-79.
Briggs Weaver Machinery Co., Dallas, Texas
The Brownell Co., Dayton, Ohio
The Cochrane Corp., 3130 N. 17th St., Philadelphia, Pa.
Croll-Reynolds Eng'rg. Co., Inc., 95 Liberty St., New York, N. Y.
Elliott Company, Jeannette, Pa. See page 101.
Frost Mfg. Co., Galesburg, Ill.
A. D. Granger Co., 15 Park Row, New York, N. Y.
Griscom-Russell Co., 285 Madison Ave., New York, N. Y. See page 133.
Hoppes Mfg. Co., 19 Larch St., Springfield, Ohio.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
Milwaukee Boiler Mfg. Co., 35th St. & National Ave., Milwaukee, Wis.
Milwaukee Reliance Boiler Works, Milwaukee, Wis.
National Pipe Bending Co., New Haven, Conn.
National Supply Co., Toledo, Ohio
Nitingale & Childs Co., 195 Albany St., Cambridge Sta., Boston, Mass.
H. A. Paine Co., 419-20 Cotton Exchange Bldg., Houston, Texas.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Philadelphia Coppersmithing Co., 222 N. Front St., Philadelphia, Pa.
The Randle Machinery Co., 1723 Power St., Cincinnati, Ohio
Ross Heater & Mfg. Co., Inc., Buffalo, N. Y.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Schutte & Koerting Co., 1165 Thompson St., Philadelphia, Pa. See page 149.
Sims Co., Erie, Pa.
The Stanwood Corp., Cincinnati, O.
John Simmons Co., 104-10 Center St., New York, N. Y.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Stickle Steam Specialties Co., Indianapolis, Ind.
Swartwout Co., 18525 Euclid Ave., Cleveland, Ohio.
Tennant Co., Union National Bank Bldg., Houston, Texas.
Thermal Efficiency Co., 1210 Scarritt Bldg., Kansas City, Mo. See page 113.
Geo. A. Weld & Co., 80 Federal St., Boston, Mass.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
Whitlock Coil Pipe Co., Hartford, Conn.

HEATERS, Feed Water Closed

Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
Babcock-Wilcox and Goldie-McCulloch, Ltd., Galt, Ontario, Canada
Bethlehem Shipbuilding Corp., Bethlehem, Pa.
Biggs Boiler Works Co., Case Ave. and Newton St., Akron, Ohio
C. F. Braun & Co., Alhambra, Cal. See pages 78-79.
Briggs Weaver Machinery Co., Dallas, Texas
The Brownell Co., Dayton, Ohio
The Cochrane Corp., 3130 N. 17th St., Philadelphia, Pa.
T. F. Downey Boiler Works, 2600-10 W. Grand Ave., Chicago, Ill.
Elliott Company, Jeanette, Pa. See page 101.
Frost Mfg. Co., Galesburg, Ill.
Griscom-Russell Co., 285 Madison Ave., New York, N. Y. See page 133.
Arthur Harris & Co., 212 Curtis St., Chicago, Ill.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.
Milwaukee Reliance Boiler Works, Milwaukee, Wis.
National Pipe Bending Co., New Haven, Conn.
National Supply Co., Toledo, Ohio
Ocean Shore Iron Works, 550 Eighth St., San Francisco, Calif.
H. A. Paine Co., 419-20 Cotton Exchange Bldg., Houston, Texas.
Philadelphia Coppersmithing Co., 222 N. Front St., Philadelphia, Pa.
The Randle Machinery Co., 1723 Power St., Cincinnati, Ohio
Ross Heater & Mfg. Co., Inc., Buffalo, N. Y.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Schutte & Koerting Co., 1165 Thompson St., Philadelphia, Pa. See page 149.
Sims Co., Erie, Pa.
The Stanwood Corp., Cincinnati, O.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Tennant Co., Union National Bank Bldg., Houston, Texas.
Thermal Efficiency Co., 1210 Scarritt Bldg., Kansas City, Mo. See page 113.
Geo. A. Weld & Co., 80 Federal St., Boston, Mass.
East Pittsburgh, Pa.
Wheeler Condenser & Engineering Corp., 149 Broadway, N. Y., N.Y
Whitlock Coil Pipe Co., Hartford, Conn.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

HEATERS, Feed Water Open

Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
Babcock-Wilcox and Goldie-McCulloch, Ltd., Galt, Ontario, Canada
Brass Foundry & Machine Co., Fort Wayne, Ind.
Briggs Weaver Machinery Co., Dallas, Texas
The Brownell Co., Dayton, Ohio
The Cochrane Corp., 3130 N. 17th St., Philadelphia, Pa.
Elliott Company, Jeannette, Pa. See page 101.
Frost Mfg. Co., Galesburg, Ill.
Griscom-Russell Co., 285 Madison Ave., New York, N. Y. See page 133.
A. D. Granger Co., 15 Park Row, New York, N. Y.
Hartwell Iron Works, Houston, Texas
Hoppes Mfg. Co., 19 Larch St., Springfield, Ohio.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
International Filter Co., 335 W. Twenty-Fifth Place, Chicago, Ill.
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.
Milwaukee Reliance Boiler Works, Milwaukee, Wis.
National Pipe Bending Co., New Haven, Conn.
National Supply Co., Toledo, Ohio
Nitingale & Childs Co., 195 Albany St., Cambridge Sta., Boston, Mass.
Power Plant Specialty Co., 440 So. Dearborn St., Chicago, Ill.
The Randle Machinery Co., 1723 Power St., Cincinnati, Ohio
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Sims Co., Erie, Pa.
John Simmons Co., 104-10 Center St., New York, N. Y.
The Stanwood Corp., Cincinnati, O.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Stickle Steam Specialties Co., Indianapolis, Ind.
Tennant Co., Union National Bank Bldg., Houston, Texas.
Thermal Efficiency Co., 1210 Scarritt Bldg., Kansas City, Mo. See page 113.
Geo. A. Weld & Co., 80 Federal St., Boston, Mass.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

HEATERS, Fuel Oil

The Alexander Milburn Co., 1416 W. Baltimore St., Baltimore, Md.
Bethlehem Shipbuilding Corp., Bethlehem, Pa.
C. F. Braun & Co., Alhambra, Cal. See pages 78-79.
Briggs Weaver Machinery Co., Dallas, Texas
Croll-Reynolds Eng'rg. Co., Inc., 95 Liberty St., New York, N. Y.
John Dollinger, Jr., Inc., Box 423. Beaumont, Texas
Griscom-Russell Co., 285 Madison Ave., New York, N. Y. See page 133.
George J. Hagan Co., Chamber of Commerce Bldg., Pittsburgh, Pa.
Jewell Polar Co., 9 S. Clinton St., Chicago, Ill.
Lamert & Mann Co., Wood & Waknut Sts., Chicago, Ill.
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.
MacLeod Company, Cincinnati, Ohio
Maxon Premix Burner Co., Muncie, Ind.
National Airoil Burner Co., 9th and Thompson Sts., Philadelphia, Pa. See page 20.
National Pipe Bending Co., New Haven, Conn.
Peabody Engineering Corp., 110 E. Forty Second St., New York, N. Y.
Pioneer Tank & Boiler Co., Box 1926, Tulsa, Okla. See page 157.
Refineries Clay Co., 430 Story Bldg., Los Angeles, Calif.
Ross Heater Co., Inc., Buffalo, N. Y.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Schutte & Koerting Co., 1165 Thompson St., Philadelphia, Pa. See page 149.
Sims Co., Erie, Pa.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
The Superheater Co, 17 E. 42nd St., New York City, N. Y.
Tennant Co., Union National Bank Bldg., Houston, Texas.
Titusville Iron Works, Titusville, Pa.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Geo. A. Weld & Co., 80 Federal St., Boston, Mass.
Whitlock Coil Pipe Co., Hartford, Conn.
G. E. Witt Co., Inc., 862-64 Howard St., San Francisco, Calif.

HEATERS, Tank

Geo. A. Weld & Co., 80 Federal St., Boston, Mass.

HEATERS, Water Supply

Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
American District Steam Co., N. Tonawanda, N. Y.
C. F. Braun & Co., Alhambra, Cal. See pages 78-79.
Briggs Weaver Machinery Co., Dallas, Texas
Carleton Mace Engr. Co., 244 Dover St., Boston, Mass.
Central Automatic Sprinkler Co., 5145 Delancey St., Philadelphia, Pa.
The Cochrane Corp., 3130 N. 17th St., Philadelphia, Pa.
Croll-Reynolds Eng'rg. Co., Inc., 95 Liberty St., New York, N. Y.
John Dollinger, Jr., Inc., Box 423, Beaumont, Texas
Eclipse Fuel Engineering Co., Rockford, Ill.
A. D. Granger Co., 15 Park Row, New York, N. Y.
Griscom-Russell Co., 285 Madison Ave., New York, N. Y. See page 133.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Kewanee Boiler Co., Kewanee, Ill.
Keystone Boiler & Foundy Co., Landisville, Pa.
L. O. Koven & Brother, Inc., 154 Ogden Ave., Jersey City, N.J.
Marion Machine, Foundry & Supply Co., Box 685, Marion, Ind.
National Pipe Bending Co., New Haven, Conn.
H. A. Paine Co., 419-20 Cotton Exchange Bldg., Houston, Texas.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Ross Heater & Mfg. Co., Inc., Buffalo, N. Y.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Sims Co., Erie, Pa.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Tennant Co., Union National Bank Bldg., Houston, Texas.
Thermal Efficiency Co., 1210 Scarritt Bldg., Kansas City, Mo. See page 113.
Titusville Iron Works, Titusville, Pa.
Walworth Company, 88 Pearl St., Boston, Mass.
Geo. A. Weld & Co., 80 Federal St., Boston, Mass.
Wheeler Condenser & Engineering Corp., 149 Broadway, N. Y., N.Y
Whitlock Coil Pipe Co., Hartford, Conn.
G. E. Witt Co., Inc., 862-64 Howard St., San Francisco, Calif.

HEATING, Apparatus

Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
The Alexander Milburn Co., 1416 W. Baltimore St., Baltimore, Md.
The American Blower Co., 6004 Russell, Detroit, Mich.
American District Steam Co., N. Tonawanda, N. Y.
Bayley Mfg. Co., 73z Greenbush St., Milwaukee, Wis.
C. F. Braun & Co., Alhambra, Cal. See pages 78-79.
C. A. Dunham Co., The Dunham Bldg., 450 E. Ohio St., Chicago, Illinois
Gorton & Lidgerwood Co., 96 Liberty St., New York, N. Y.
E. Keeler Co., Williamsport, Pa.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Kewanee Boiler Co., Kewanee, Ill.
Keystone Boiler & Foundy Co., Landisville, Pa.
McAlear Mfg. Co., 1901-07 S. Western Ave., Chicago, Ill.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Ross Heater & Mfg. Co., Inc., Buffalo, N. Y.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Sarco Co., Inc., 183 Madison Ave., New York, N. Y.
Stickle Steam Specialties Co., Indianapolis, Ind.
Walworth Company, 88 Pearl St., Boston, Mass.

HEATING, Systems

Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
The American Blower Co., 6004 Russell, Detroit, Mich.
American District Steam Co., N. Tonawanda, N. Y.
Bayley Mfg. Co., 73z Greenbush St., Milwaukee, Wis.

W. N. Best Furnace & Burner Corp., 11 Broadway, New York, New York.
C. A. Dunham Co., The Dunham Bldg., 450 E. Ohio St., Chicago, Illinois
Gorton & Lidgerwood Co., 96 Liberty St., New York, N. Y.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Keystone Boiler & Foundy Co., Landisville, Pa.
McAlear Mfg. Co., 1901-07 S. Western Ave., Chicago, Ill.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Ross Heater & Mfg. Co., Inc., Buffalo, N. Y.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Sarco Co., Inc., 183 Madison Ave., New York, N. Y.
Shevlin Engineering Co., Inc., 259 W. 34th St., New York, N. Y.
Stickle Steam Specialties Co., Indianapolis, Ind.
Walworth Company, 88 Pearl St., Boston, Mass.

HELMETS, Sand Blast

Pulmosan Safety Equipment Co., 45 Willoughby St., Brooklyn, New York. See page 159.

HOISTS

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
American Engineering Co., Philadelphia, Pa.
The Brady Conveyors Corp., 20 W. Jackson Blvd., Chicago, Ill.
Briggs Weaver Machinery Co., Dallas, Texas
Chicago Pneumatic Tool Co., 6 E. 44th St., New York, N. Y.
Continental Supply Co., St. Louis, Missouri
Domestic Engine & Pump Co., Shippensburg, Pa.
Equitable Equipment Co., Inc., New Orleans, La.
R. B. Everett Co., Houston, Texas
A. D. Granger Co., 15 Park Row, New York, N. Y.
Hanna Engineering Works, 1769 Elston Ave., Chicago, Ill.
Hoist & Crane Eng. Co., New York, N. Y.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
National Supply Co., Toledo, Ohio
Oil Well Supply Co., Pittsburgh, Pa.
H. A. Paine Co., 419-20 Cotton Exchange Bldg., Houston, Texas.
Peden Iron & Steel Co., Houston Texas. See page 85.
Joseph T. Ryerson & Sons, 2558 W. 16th St., Chicago, Ill.
Sculley Steel & Iron Co., Chicago, Ill.
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
Tennant Co., Union National Bank Bldg., Houston, Texas.
M. H. Treadwell Co. of Ill., 208 S. La Salle St., Chicago, Ill.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Western Machinery Co., Los Angeles, Calif.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

HOISTS, Portable

Sullivan Machinery Co., 122 S Michigan Ave., Chicago, Ill.

HOISTS, Skip

Jeffrey Mfg. Co., 904-99 No. Fourth St., Columbus, Ohio.

HOLDERS, Electrode

Brazelton, Wessendorff & Nelms, Houston, Texas
Peden Iron & Steel Co., Houston, Texas. See page 85.

HOODS, Acid

E. Van Noorden Co., 100 Magazine St. Roxbury, Mass.
Pulmosan Safety Equipment Co., 45 Willoughby St., Brooklyn, N. Y. See page 159.

HOOKS, Belt

Briggs Weaver Machinery Co., Dallas, Texas
Chicago Belting Co., 125 N. Green, Chicago, Ill.
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
R. & J. Dick Co., Inc., Passaic, N. J.
Grand Rapids Belting Co., 1-3 Ionia Ave., Grand Rapids, Mich.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
The N. Palmer Belting Co., Bridgeport, Conn.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
J. S. Turner Mfg. Co., 133 Middle St., P. O. Box 1072, Lowell, Mass.
Union Iron Works, Selma, Ala.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

HOOKS, Packing

Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.

HOPPERS, Storage

The Brady Conveyors Corp., 20 W. Jackson Blvd., Chicago, Ill.
John Dollinger, Jr., Inc., Box 423, Beaumont, Texas
Erie City Iron Works, Erie, Pa.
Finucane Boiler Works, Houston, Texas.
Green Engineering Co., E. Chicago, Ind.
Arthur G. McKee & Co., 2422 Euclid Ave., Cleveland, Ohio
Milwaukee Boiler Mfg. Co., 35th St. & National Ave., Milwaukee, Wis.
Prospect Boiler Co., Ward St. and Raritan River R. R., New Brunswick, N. J.
Quaker City Iron Works, Richmond & Tioga Sts., Philadelphia, Pa.
Union Engineering Co., Cleveland, Ohio.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
E. Van Noorden Co., 100 Magazine St. Roxbury, Mass.
The Widdell Engineering Co., 512 American Bk. Bldg., Kansas City, Mo.

HORTONSPHERES

Chicago Bridge & Iron Works, 37 Van Buren St., Chicago, Ill. See page 148.

HOSE

The Alexander Milburn Co., 1416 W. Baltimore St., Baltimore, Md.
American Metal Hose Co., Waterbury, Conn.
Austin-Mason Co., 15 Park Row, New York, N. Y.
Brazelton, Wessendorff & Nelms, Houston, Texas
Briggs Weaver Machinery Co., Dallas, Texas
Butler Mfg. Co., 1124 Grand Ave., Kansas City, Mo.
Chicago Pneumatic Tool Co., 6 E. 44th St., New York, N. Y.
Columbian Steel Tank Co., 1401-1631 W. Twelfth St., Kansas City, Mo.
Continental Supply Co., St. Louis, Missouri
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Thos. H. Dallett Co., 165-89 W. Clearfield St., Philadelphia, Pa.
Diamond Rubber Co., Inc., Akron, Ohio.
Garlock Packing Co., 50 Main St., Palmyra, N. Y. See page 67.
B. F. Goodrich Rubber Co., Akron, Ohio
Greene Brothers, Wichita Falls, Texas. See page 61.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Geo. W. Knowlton Rubber Co., 60 Pearl St., Boston, Mass.
La Favorite Rubber Mfg. Co., Wagaraw Rd., Hawthorne, N. J
The Manhattan Rubber Mfg. Co., Passaic, N. J.
National Supply Co., Toledo, Ohio
New York Belting & Packing Co., 91-93 Chamber St., New York, N. Y.
Oil Well Supply Co., Pittsburgh, Pa.
Peden Iron & Steel Co., Houston Texas. See page 85.
Petroleum Supply Co., Houston, Texas
Pioneer Rubber Mills, 353 Sacramento St., San Francisco, Calif.
Republic Rubber Co., Youngstown, Ohio
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
John Simmons Co., 104-10 Center St., New York, N. Y.
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
Union Iron Works, Selma, Ala.
Walworth Company, 88 Pearl St., Boston, Mass.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.

HOSE, Air

Brunner Mfg. Co., Utica, N. Y.
May Machinery Co., Second National Bank Bldg., Houston, Tex.

HOSE, Fire

Austin-Mason Co., 15 Park Row, New York, N. Y.
Briggs Weaver Machinery Co., Dallas, Texas
Continental Supply Co., St. Louis, Missouri
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Diamond Rubber Co., Inc., Akron, Ohio.
B. F. Goodrich Rubber Co., Akron, Ohio
Greene Brothers, Wichita Falls, Texas. See page 61.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Geo. W. Knowlton Rubber Co., 60 Pearl St., Boston, Mass.
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New York Belting & Packing Co., 91-93 Chamber St., New York, N. Y.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Pioneer Rubber Mills, 353 Sacramento St., San Francisco, Calif.
Pulmosan Safety Equipment Co., 45 Willoughby St., Brooklyn, New York. See page 159.
Republic Rubber Co., Youngstown, Ohio
John Simmons Co., 104-10 Center St., New York, N. Y.
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
Walworth Company, 88 Pearl St., Boston, Mass.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

HOSE, Flexible Metal

Breeze Metal Hose & Mfg. Co., 22-46 S. 6th St., Newark, N. J.

HOSE, Oil Pressure

Breeze Metal Hose & Mfg. Co., 22-46 S. 6th St., Newark, N. J.

HOSE, Paint Spray

Breeze Metal Hose & Mfg. Co., 22-46 S. 6th St., Newark, N. J.

HOSE, Tank Car

Breeze Metal Hose & Mfg. Co., 22-46 S. 6th St., Newark, N. J.

HOSE, Water

F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.

HOSE, Welding

Smiths Inventions, Inc., 2636 Fourth St., S.E., Minneapolis, Minn.
Torchweld Equipment Co., 224 No. Carpenter St., Chicago, Ill.

HOUSES, Portable

Butler Mfg. Co., 1124 Grand Ave., Kansas City, Mo.
Columbian Steel Tank Co., 1401-1631 W. Twelfth St., Kansas City, Mo.

HYDRANTS Fire

Eddy Valve Co., Waterford, N. Y.
Harrisburg Pipe & Pipe Bending Co., Houston, Texas
Hartwell Iron Works, Houston, Texas
The Ludlow Valve Mfg. Co., R. A. Long Bldg., Kansas City, Mo. See page 93.
National Supply Co., Toledo, Ohio
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Petroleum Supply Co., Houston, Texas
John Simmons Co., 104-10 Center St., New York, N. Y.
Vogt Brothers Mfg. Co., 1402 W. Main St., Louisville, Ky.
R. D. Wood & Co., 400 Chestnut St., Philadelphia, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

HYDROMETERS

James Berg Mfg. Co., 3707 12th Ave., Brooklyn, N. Y.
Carbondale Machine Co., Carbondale, Pa.
Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
Continental Supply Co., St. Louis, Missouri
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Fort Worth Laboratories, 827½ Monroe St., Fort Worth, Texas. See page 158.
The Foxboro Company, Inc., Foxboro, Mass.
Greene Brothers, Wichita Falls, Texas. See page 61.
The Emil Greiner Co., 55 Fulton St., New York City
Griebel Instrument Co., Carbondale, Pa.
Jos. W. Hays Corp., 1042 E. 8th St., Michigan City, Ind.
Langstadt-Meyer Co., Appleton, Wis.
F. J. Low Co., Inc., 15 W. 44th St., New York, N. Y.
Oil Well Supply Co., Pittsburgh, Pa.
Refinery Supply Co., Tulsa, Okla. See page 44.
C. J. Tagliabue Mfg. Co., 18 33rd St., Brooklyn, N. Y.
Taylor Instrument Co., Rochester, N. Y. See page 160.
Carl H. Wagner, 1944 W. Albany Ave., Chicago, Ill.
Williams, Brown & Earle, 918 Chestnut St., Philadelphia, Pa. See page 149
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

HYGRODEIKS

Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
Fort Worth Laboratories, 828½ Monroe St., Fort Worth, Texas. See page 158.
Taylor Instrument Co., Rochester, N. Y. See page 160.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

HYGROMETERS

American Schaeffer & Budenberg Corp., Berry & S. 5th St., Brooklyn, N. Y. See page 153.
Brown Instrument Co., 4537 Wayne Ave., Philadelphia, Pa.
Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
Fort Worth Laboratories, 828½ Monroe St., Fort Worth, Texas. See page 158.
Julien P. Friez & Sons, Baltimore St. & Central Ave., Baltimore, Md.
Greene Brothers, Wichita Falls, Texas. See page 61.
Griebel Instrument Co., Carbondale, Pa.
Maintenance Eng. Corp., 1807 Conti St., Houston, Texas. See page 150.
Refinery Supply Co., Tulsa, Okla. See page 44.
C. L. Tagliabue Mfg. Co., 18 33rd St., Brooklyn, N. Y. See page 49.
Taylor Instrument Co., Rochester, N. Y. See page 160.
Carl H. Wagner, 1944 W. Albany Ave., Chicago, Ill.
Williams, Brown & Earle, 918 Chestnut St., Philadelphia, Pa. See page 149
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

I

ICE MAKERS

Audiffren Refrigerating Machine Co., 285 Madison Ave., New York, N. Y.

IDLERS, Belt

Baker Ice Machine Co., 3601 Evans St., Omaha, Nebr.
The Brady Conveyors Corp., 20 W. Jackson Blvd., Chicago, Ill.
Briggs Weaver Machinery Co., Dallas, Texas
A. & F. Brown Co., 79 Barclay St., New York, N. Y.

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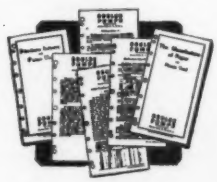

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Moloch Co., Kaukauna, Wis.
National Supply Co., Toledo, Ohio
Oil Well Supply Co., Pittsburgh, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Southern Engine & Pump Co., Houston, Texas
Texas Belting Co., Houston, Texas.
Western Machinery Co., Los Angeles, Calif.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

IGNITION

Continental Supply Co., St. Louis, Missouri
Heer Gas & Oil Engine Co., Portsmouth, Ohio.
Peden Iron & Steel Co., Houston, Texas. See page 85.

INCLOSURES, Substation

Columbia Fence & Wire Co., Dallas, Texas

INDICATORS, Combustion

Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
Brown Instrument Co., 4537 Wayne Ave., Philadelphia, Pa.
Greene Brothers, Wichita Falls, Texas. See page 61.
Jos. W. Hays Corp., 1042 E. 8th St., Michigan City, Ind.
Paul B. Huyette Co., Inc., 5 South Eighteenth St., Philadelphia, Pa.
C. J. Tagliabue Mfg. Co., 18 33rd St., Brooklyn, N. Y. See page 49.
Trill Indicator Co., Center St., Corry, Pa.
Uehling Instrument Co., 475 Getty Ave., Paterson, N. J.

INDICATORS, Engine

Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
American Schaeffer & Budenberg Corp., Berry & S. 5th St., Brooklyn, N. Y. See page 153.
Briggs Weaver Machinery Co., Dallas, Texas
The Bristol Co., Waterbury, Conn. See page 154.
Eureka Packing Co., 78-80 Murray St., New York, N. Y.
F. J. Low Co., Inc., 15 W. 44th St., New York, N. Y.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
Jas. L. Robertson & Son, 79-80 Murray St., New York, N. Y.
Star Brass Mfg. Co., 53 Oliver St., Boston, Mass.
Trill Indicator Co., Center St., Corry, Pa.
Union Iron Works, Selma, Ala.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

INDICATORS, Position

Electric Tachometer Corp., 310 N. Eleventh St., Philadelphia, Pa.

INDICATORS, Speed

Electric Tachometer Corp., 310 N. Eleventh St., Philadelphia, Pa.

INDICATORS, Temperature

American Schaeffer & Budenberg Corp., Berry & S. 5th St., Brooklyn, N. Y. See page 153.
The Bristol Co., Waterbury, Conn. See page 154.
Brown Instrument Co., 4537 Wayne Ave., Philadelphia, Pa.
Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
Charles Englehard, Inc., 30 Church St., New York, N. Y.
Eclipse Fuel Engineering Co., Rockford, Ill.
Fort Worth Laboratories, 828½ Monroe St., Fort Worth, Texas. See page 158.
Julien P. Friez & Sons, Baltimore St. & Central Ave., Baltimore, Md.
Greene Brothers, Wichita Falls, Texas. See page 61.
Illinois Testing Laboratories, Inc., 141-143 W. Austin Ave., Chicago, Ill.
Leeds & Northrup Company, Philadelphia, Pa. See page 3.
F. J. Low Co., Inc., 15 W. 44th St., New York, N. Y.
Maintenance Eng. Corp., 1802 Conti St., Houston, Texas. See page 150.
Price Mfg. Co., 12369 Euclid Ave., Cleveland, Ohio.
Refinery Supply Co., Tulsa, Okla. See page 44.
Republic Flow Meters Co., 2236 Diversey Parkway, Chicago, Ill.
C. J. Tagliabue Mfg. Co., 18 33rd St., Brooklyn, N. Y. See page 49.
Taylor Instrument Co., Rochester, N. Y. See page 160.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

INJECTORS

Briggs Weaver Machinery Co., Dallas, Texas
Continental Supply Co., St. Louis, Missouri
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Eclipse Fuel Engineering Co., Rockford, Ill.
Godfrey, Keeler Co., 70 Warren St., New York, N. Y.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
Nason Manufacturing Company, 74 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
Ocean Shore Iron Works, 550 Eighth St., San Francisco, Calif.
Ohio Injector Co., S. Main St., Wadsworth, Ohio.
Oil Well Supply Co., Pittsburgh, Pa.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Penberthy Injector Co., 340 Holden Ave., Detroit, Mich.
Plouff Co., 170 Summer St., Boston, Mass.
Wm. Powell Co., Cincinnati, Ohio
The Randle Machinery Co., 1723 Power St., Cincinnati, Ohio
Rue Mfg. Co., 228 Cherry St. Philadelphia, Pa.
Schutte & Koerting Co., 1165 Thompson St., Philadelphia, Pa. See page 149.
The Stanwood Corp., Cincinnati, O.
Union Iron Works, Selma, Ala.
Walworth Company, 88 Pearl St., Boston, Mass.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.

INSTRUMENTS, Drawing

Abbott-McKay Corp., 21 Pearl St., Boston, Mass.
Eugene Dietzgen Co., 162-166 W. Monroe St., Chicago, Ill.
Gilson Slide Rule Co., Niles, Mich.
W. & L. E. Gurley, Troy, N. Y.
Keuffel & Esser Co., Hoboken, N. J.
Kolesch & Co., 138 Fulton St., New York, N. Y.
Paragon Machine Co., 77 South Ave., Rochester, N. Y.
The C. F. Pease Co., 866 N. Franklin St., Chicago, Ill.
Spaulding-Moss Co., 42 Franklin St., Boston, Mass.
Williams, Brown & Earle, 918 Chestnut St., Philadelphia, Pa. See page 149

INSTRUMENTS, Electrical

James G. Biddle, 1211-1213 Arch St., Philadelphia, Pa.
The Bristol Co., Waterbury, Conn.
Brown Instrument Co., 4537 Wayne Ave., Philadelphia, Pa.
Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
Charles Englehard, Inc., 30 Church St., New York, N. Y.
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Cutler-Hammer Mfg. Co., Milwaukee, Wis.
The Esterline-Angus Co., P. O. Box 596, Indianapolis, Ind.
Greene Brothers, Wichita Falls, Texas. See page 61.
Houston Armature Works, Houston, Texas
Illinois Testing Laboratories, Inc., 141-143 W. Austin Ave., Chicago, Ill.
Langstadt-Meyer Co., Appleton, Wis.
Pyrolectric Instrument Co., Easton, Pa.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
Wilson Maeulen Co., 383 Concord Ave., New York, N. Y.

INSTRUMENTS, Engineering

Abbott-McKay Corp., 21 Pearl St., Boston, Mass.
American Schaeffer & Budenberg Corp., Berry & S. 5th St., Brooklyn, N. Y. See page 153.
Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
Eugene Dietzgen Co., 162-166 W. Monroe St., Chicago, Ill.
Fort Worth Laboratories, 828½ Monroe St., Fort Worth, Texas. See page 158.
Gilson Slide Rule Co., Niles, Mich.
W. & L. E. Gurley, Troy, N. Y.
Keuffel & Esser Co., Hoboken, N. J.
Kolesch & Co., 138 Fulton St., New York, N. Y.
Paragon Machine Co., 77 South Ave., Rochester, N. Y.
The C. F. Pease Co., 866 N. Franklin St., Chicago, Ill.
Uehling Instrument Co., 475 Getty Ave., Paterson, N. J.
Williams, Brown & Earle, 918 Chestnut St., Philadelphia, Pa. See page 149

INSTRUMENTS, Humidity

American Schaeffer & Budenberg Corp., Berry & S. 5th St., Brooklyn, N. Y. See page 153.
The Bristol Co., Waterbury, Conn. See page 154.
Brown Instrument Co., 4537 Wayne Ave., Philadelphia, Pa.
Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Davis Instrument Mfg. Co., 110 W. Fayette St., Baltimore, Md.
Fort Worth Laboratories, 828½ Monroe St., Fort Worth, Texas. See page 158.
Julien P. Friez & Sons, Baltimore St. & Central Ave., Baltimore, Md.
Greene Brothers, Wichita Falls, Texas. See page 61.
Henry J. Green, 1191 Bedford Ave., Brooklyn, N. Y.
Maintenance Eng. Corp., 1802 Conti St., Houston, Texas. See page 150.
Powers Regulator Co., 2720 Greenview Ave., Chicago, Ill.
Refinery Supply Co., Tulsa, Okla. See page 44.
Spaulding-Moss Co., 42 Franklin St., Boston, Mass.
C. J. Tagliabue Mfg. Co., 18 33rd St., Brooklyn, N. Y. See page 49
Taylor Instrument Co., Rochester, N. Y. See page 160.
Carl H. Wagner, 1944 W. Albany Ave., Chicago, Ill.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.

INSTRUMENTS, Measuring

The Bristol Co., Waterbury, Conn. See page 154.
Brown Instrument Co., 4537 Wayne Ave., Philadelphia, Pa.
Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Davis Instrument Mfg. Co., 110 W. Fayette St., Baltimore, Md.
Goodell-Pratt Co., 57 Wells St., Greenfield, Mass.
Greene Brothers, Wichita Falls, Texas. See page 61.
Keuffel & Esser Co., Hoboken, N. J.
Kolesch & Co., 138 Fulton St., New York, N. Y.
Maintenance Eng. Corp., 1802 Conti St., Houston, Texas. See page 150.
The C. F. Pease Co., 866 N. Franklin St., Chicago, Ill.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Refinery Supply Co., Tulsa, Okla. See page 44.
C. J. Tagliabue Mfg. Co., 18 33rd St., Brooklyn, N. Y. See page 49.
Westcott & Greis, Inc., Tulsa, Okla. See page 15.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

INSTRUMENTS, Oil Testing

Barnhart-Davis Co., Warren, Pa.
Continental Supply Co., St. Louis, Missouri
Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
The Denver Fire Clay Co., P. O. Box 1107 Denver, Colorado
Fort Worth Laboratories, 828½ Monroe St., Fort Worth, Texas. See page 158.
Henry J. Green, 1191 Bedford Ave., Brooklyn, N. Y.
Greene Brothers, Wichita Falls, Texas. See page 61.
Griebel Instrument Co., Carbondale, Pa.
Maintenance Eng. Corp., 1802 Conti St., Houston, Texas. See page 150.
Oil Well Supply Co., Pittsburgh, Pa.
Refinery Supply Co., Tulsa, Okla. See page 44.
C. J. Tagliabue Mfg. Co., 18 33rd St., Brooklyn, N. Y.
Taylor Instrument Co., Rochester, N. Y. See page 160.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

INSTRUMENTS, Recording

American Schaeffer & Budenberg Corp., Berry & S. 5th St., Brooklyn, N. Y. See page 153.
The Bristol Co., Waterbury, Conn. See page 154.
Brown Instrument Co., 4537 Wayne Ave., Philadelphia, Pa.
Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
Continental Supply Co., St. Louis, Missouri
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Defender Automatic Regulator Co., 709 Pine St., St. Louis, Mo.
Eclipse Fuel Engineering Co., Rockford, Ill.
Charles Englehard, Inc., 30 Church St., New York, N. Y.
The Esterline-Angus Co., P. O. Box 596, Indianapolis, Ind.
Fort Worth Laboratories, 828½ Monroe St., Fort Worth, Texas. See page 158.
Julien P. Friez & Sons, Baltimore St. & Central Ave., Baltimore, Md.
Greene Brothers, Wichita Falls, Texas. See page 61.
Griebel Instrument Co., Carbondale, Pa.
W. & L. E. Gurley, Troy, N. Y.
Jos. W. Hays Corp., 1042 E. 8th St., Michigan City, Ind.
F. J. Low Co., Inc., 15 W. 44th St., New York, N. Y.
Maintenance Eng. Corp., 1802 Conti St., Houston, Texas. See page 150.
Oil Well Supply Co., Pittsburgh, Pa.
Price Mfg. Co., 12369 Euclid Ave., Cleveland, Ohio.
Refinery Supply Co., Tulsa, Okla. See page 44.
Republic Flow Meters Co., 2236 Diversey Parkway, Chicago, Ill.
C. J. Tagliabue Mfg. Co., 18 33rd St., Brooklyn, N. Y. See page 49.
Taylor Instrument Co., Rochester, N. Y. See page 160.
Uehling Instrument Co., 475 Getty Ave., Paterson, N. J.
Westcott & Greis, Inc., Tulsa, Okla. See page 15.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
Williams, Brown & Earle, 918 Chestnut St., Philadelphia, Pa. See page 149
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

INSTRUMENTS, Scientific

Abbott-McKay Corp., 21 Pearl St., Boston, Mass.
The Britol Co., Waterbury, Conn. See page 154.
Brown Instrument Co., 4537 Wayne Ave., Philadelphia, Pa.
Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Davis Instrument Mfg. Co., 110 W. Fayette St., Baltimore, Md.
Electric Tachometer Corp., 310 N. Eleventh St., Philadelphia, Pa.
Fort Worth Laboratories, 828½ Monroe St., Fort Worth, Texas. See page 158.
Julien P. Friez & Sons, Baltimore St. & Central Ave., Baltimore, Md.

Greene Brothers, Wichita Falls, Texas. See page 61.
Griebel Instrument Co., Carbondale, Pa.
Keuffel & Esser Co., Hoboken, N. J.
F. J. Low Co., Inc., 15 W. 44th St., New York, N. Y.
Maintenance Eng. Corp., 1802 Cont' St. Houston, Texas. See page 150.
Precision Scientific Co., 820 S. Tripp Ave., Chicago, Ill.
Pyrolectric Instrument Co., Easton, Pa.
Refinery Supply Co., Tulsa, Okla. See page 44.
Taylor Instrument Co., Rochester, N. Y. See page 160.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
Williams, Brown & Earle, 918 Chestnut St., Philadelphia, Pa See page 149
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.

INSTRUMENTS, Surveying

Abbott-McKay Corp., 21 Pearl St., Boston, Mass.
Davis Instrument Mfg. Co., 110 W. Fayette St., Baltimore, Md.
Eugene Dietzgen Co., 162-166 W. Monroe St., Chicago, Ill.
W. & L. E. Gurley, Troy, N. Y.
Keuffel & Esser Co., Hoboken, N. J.
Kolesch & Co., 138 Fulton St., New York, N. Y.
Maintenance Eng. Corp., 1802 Conti St., Houston, Texas. See page 150.
Paragon Machine Co., 77 South Ave., Rochester, N. Y.
The C. F. Pease Co., 866 N. Franklin St., Chicago, Ill.
Spaulding-Moss Co., 42 Franklin St., Boston, Mass.
Williams, Brown & Earle, 918 Chestnut St., Philadelphia, Pa. See page 149

INSTRUMENTS, Testing

The Bristol Co., Waterbury, Conn. See page 154.
Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
Davis Instrument Mfg. Co., 110 W. Fayette St., Baltimore, Md.
The Esterline-Angus Co., P. O. Box 596, Indianapolis, Ind.
Fort Worth Laboratories, 828½ Monroe St., Fort Worth, Texas. See page 158.
Julien P. Friez & Sons, Baltimore St. & Central Ave., Baltimore, Md.
Greene Brothers, Wichita Falls, Texas. See page 61.
Griebel Instrument Co., Carbondale, Pa.
Jos. W. Hays Corp., 1042 E. 8th St., Michigan City, Ind.
Kolesch & Co., 138 Fulton St., New York, N. Y.
F. J. Low Co., Inc., 15 W. 44th St., New York, N. Y.
Maintenance Eng. Corp., 1802 Cont' St., Houston, Texas. See page 150.
Oil Well Supply Co., Pittsburgh Pa.
Pyrolectric Instrument Co., Easton Pa.
Refinery Supply Co., Tulsa, Okla See page 44.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex
C. J. Tagliabue Mfg. Co., 18 33rd St., Brooklyn, N. Y. See page 49.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.

INSULATING CEMENTS

Acme Asbestos Cov. & Supply Co., 242 N. Elizabeth St., Chicago, Ill.
Armstrong Cork & Insulation Co., Pittsburgh, Pa.
R. V. Aycock Co., Kansas City, Mo.
Banner Rock Products Co., Alexandria, Ind.
Briggs Weaver Machinery Co., Dallas, Texas
Celite Products Co., 1320 South Hope St., Los Angeles, Cal. See front page.
Continental Products Co., Euclid, Ohio
Eclipse Fuel Engineering Co., Rockford, Ill.
Ehret Magnesia Mfg. Co., 20 E. Jackson Blvd., Chicago, Ill.
Ehrot Magnesia Mfg. Co., Valley Forge, Pa.
Insulating Products Co., 1601 Fulford St., Kalamazoo, Michigan.
Keasbey & Mattison Co., Ambler, Pa.
Nitingale & Childs Co., 195 Albany St., Cambridge Sta., Boston, Mass.
Norristown Mangesia & Asbestos Co., Norristown, Pa.
Philip Carey Co., Cincinnati, Ohio
Quigley Furnace Specialties Co., 25 Church St., New York, N. Y.
Rogers Asbestos Co., Houston Texas.
The Sherwin-Williams Co., 601 Canal Road, Cleveland, Ohio.
Standard Asbestos Mfg. Co., 820-2. West Lake St., Chicago, Ill.
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.

INSULATING MATERIAL

Armstrong Cork & Insulation Co., Pittsburgh, Pa.
Armstrong Machinery Co., 3201-15 E. Riverside, Spokane, Wash.
R. V. Aycock Co., Kansas City Mo.
Banner Rock Products Co., Alexandria, Ind.
Celite Products Co., 1320 South Hope St., Los Angeles, Calif See front cover.
Continental Supply Co., St. Louis, Missouri
Ehret Magnesia Mfg. Co., 20 E. Jackson Blvd., Chicago, Ill.
Ehrot Magnesia Mfg. Co., Valley Forge, Pa.
Insulating Products Co., 1601 Fulford St., Kalamazoo, Michigan.
Keasbey & Mattison Co., Ambler, Pa.
Nitingale & Childs Co., 195 Albany St., Cambridge Sta., Boston, Mass.
North American Car Co., 327 S. LaSalle Co., Chicago, Ill. See page 156.
Philip Carey Co., Cincinnati, Ohio
Quigley Furnace Specialties Co., 25 Church St., New York, N. Y.
The Sherwin-Williams Co., 601 Canal Road, Cleveland, Ohio.
Standard Asbestos Mfg. Co., 820-2. West Lake St., Chicago, Ill.
Union Fibre Co., Winona, Minn
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.

INSULATING MATERIAL, Asbestos

Acme Asbestos Cov. & Supply Co. 242 N. Elizabeth St., Chicago, Ill.
American Gas Construction Co., Newton, Iowa
R. V. Aycock Co., Kansas City Mo.
Continental Products Co., Euclid, Ohio
Ehret Magnesia Mfg. Co., 20 E. Jackson Blvd., Chicago, Ill.
Keasbey & Mattison Co., Ambler, Pa.
Nitingale & Childs Co., 195 Albany St., Cambridge Sta., Boston, Mass.
Norristown Mangesia & Asbestos Co., Norristown, Pa.
Philip Carey Co., Cincinnati, Ohio
Rogers Asbestos Co., Houston Texas.
The Sherwin-Williams Co., 601 Canal Road, Cleveland, Ohio.
Standard Asbestos Mfg. Co., 820-2. West Lake St., Chicago, Ill.
Union Fibre Co., Winona, Minn.
Woodward, Wight & Co., New Orleans, La. See page 153.

INSULATING MATERIALS, Cold

Acme Asbestos Cov. & Supply Co. 242 N. Elizabeth St., Chicago, Ill.
Armstrong Cork & Insulation Co., Pittsburgh, Pa.
Armstrong Machinery Co., 3201-15 E. Riverside, Spokane, Wash.
R. V. Aycock Co., Kansas City, Mo.
Baker Ice Machine Co., 3601 Evans St., Omaha, Nebr.
Banner Rock Products Co., Alexandria, Ind.
Ehret Magnesia Mfg. Co., 20 E. Jackson Blvd., Chicago, Ill.
Ehrot Magnesia Mfg. Co., Valley Forge, Pa.
Insulating Products Co., 1601 Fulford St., Kalamazoo, Michigan.
Nitingale & Childs Co., 195 Albany St., Cambridge Sta., Boston, Mass.
Norristown Mangesia & Asbestos Co., Norristown, Pa.
Philip Carey Co., Cincinnati, Ohio
Rogers Asbestos Co., Houston, Texas.
Standard Asbestos Mfg. Co., 820-2. West Lake St., Chicago, Ill.
Union Fibre Co., Winona, Minn.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.

INSULATING MATERIALS, Heat

Acme Asbestos Cov. & Supply Co., 242 N. Elizabeth St., Chicago, Ill.
Armstrong Cork & Insulation Co., Pittsburgh, Pa.
R. V. Aycock Co., Kansas City Mo.
Banner Rock Products Co., Alexandria, Ind.
Celite Products Co., 1320 South Hope St., Los Angeles, Calif. See front cover.
Ehret Magnesia Mfg. Co., 20 E. Jackson Blvd., Chicago, Ill.
Ehrot Magnesia Mfg. Co., Valley Forge, Pa.
Insulating Products Co., 1601 Fulford St., Kalamazoo, Michigan.
Keasbey & Mattison Co., Ambler, Pa.
Nitingale & Childs Co., 195 Albany St., Cambridge Sta., Boston, Mass.
Norristown Mangesia & Asbestos Co., Norristown, Pa.
Philip Carey Co., Cincinnati, Ohio
Quigley Furnace Specialties Co., 25 Church St., New York, N. Y.
The Ric-Wil Co., 1573 Union Trust Bldg., Cleveland, Ohio.
Rogers Asbestos Co., Houston Texas.
Standard Asbestos Mfg. Co., 820-2. West Lake St., Chicago, Ill.
Union Fibre Co., Winona, Minn.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.

INSULATION, Boiler

Acme Asbestos Cov. & Supply Co. 242 N. Elizabeth St., Chicago, Ill.
Armstrong Cork & Insulation Co., Pittsburgh, Pa.
R. V. Aycock Co., Kansas City Mo.
Banner Rock Products Co., Alexandria, Ind.
The Barber Asphalt Co., 1600 Arch St., Philadelphia, Pa.
Briggs Weaver Machinery Co., Dallas, Texas
Celite Products Co., 1320 South Hope St., Los Angeles, Calif. See front cover.
Continental Supply Co., St. Louis, Missouri
Ehret Magnesia Mfg. Co., 20 E. Jackson Blvd., Chicago, Ill.
Ehrot Magnesia Mfg. Co., Valley Forge, Pa.
Insulating Products Co., 1601 Fulford St., Kalamazoo, Michigan.
Johns-Manville Inc., 292 Madison Ave., New York, N. Y.
Keasbey & Mattison Co., Ambler, Pa.
Nitingale & Childs Co., 195 Albany St., Cambridge Sta., Boston, Mass.
Norristown Mangesia & Asbestos Co., Norristown, Pa.
Philip Carey Co., Cincinnati, Ohio
Quigley Furnace Specialties Co., 25 Church St., New York, N. Y.
Rogers Asbestos Co., Houston, Texas.
Standard Asbestos Mfg. Co., 820-2. West Lake St., Chicago, Ill.
Union Fibre Co., Winona, Minn.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.

INSULATION, Felted Mineral Wool

Insulating Products Co., 1601 Fulford St., Kalamazoo, Michigan.

INSULATION, Rock Wool

Banner Rock Products Co., Alexandria, Ind.

INSULATION, Tank Car

Armstrong Cork & Insulation Co., Pittsburgh, Pa.

INTERCHANGERS, Heat

The American Blower Co., 6004 Russell, Detroit, Mich.
Arctic Ice Machine Co., Canton, Ohio
C. F. Braun & Co., Alhambra, Cal. See pages 78-79.
The Calorizing Co., Wilkinsburg Pa.
Carbondale Machine Co., Carbondale, Pa.
Croll-Reynolds Eng'rg. Co., Inc., 95 Liberty St., New York, N. Y.
Elliott Company, Jeannette, Pa. See page 101.
Finucane Boiler Works, Houston, Texas.
Dean E. Foster, New Wright Bldg., Tulsa, Okla.
Griscom-Russell Co., 285 Madison Ave., New York, N. Y. See page 133.
Hope Engineering & Supply Co., Mount Vernon, Ohio
National Pipe Bending Co., New Haven, Conn.
National Supply Co., Toledo, Ohio
Oil Well Supply Co., Pittsburgh, Pa.
Petroleum Iron Works, Sharon, Pa.
Philadelphia Coppersmithing Co., 222 N. Front St., Philadelphia, Pa.
Pioneer Tank & Boiler Co., Box 1926, Tulsa, Okla. See page 157.
Ross Heater & Mfg. Co., Inc., Buffalo, N. Y.
Schutte & Koerting Co., 1165 Thompson St., Philadelphia, Pa. See page 149.
Sims Co., Erie, Pa.
Southwestern Engineering Co., Hollingsworth Bldg., Los Angeles, Cal. See page 109.
Tennant Co., Union National Bank Bldg., Houston, Texas.
Titusville Iron Works, Titusville, Pa.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Wheeler Condenser & Engineering Corp., 149 Broadway, N. Y., N.Y
Whitlock Coil Pipe Co., Hartford, Conn.
York Manufacturing Co., York, Pa. See page 143.

INTERCOOLERS

Arctic Ice Machine Co., Canton, Ohio
The Bessemer Gas Engine Co., Grove City, Pa. See inside back cover.
C. F. Braun & Co., Alhambra, Cal. See pages 78-79.
Carbondale Machine Co., Carbondale, Pa.
Chicago Pneumatic Tool Co., 6 E. 44th St., New York, N. Y.
Cooper, C. & G., Co., Mt. Vernon, Ohio. See pages 30-31.
Elliott Company, Jeannette, Pa. See page 101.
Fort Worth Steel & Machinery Co., Fort Worth, Texas
Griscom-Russell Co., 285 Madison Ave., New York, N. Y. See page 133.
National Pipe Bending Co., New Haven, Conn.
National Supply Co., Toledo, Ohio
Oil Well Supply Co., Pittsburgh, Pa.
Philadelphia Coppersmithing Co., 222 N. Front St., Philadelphia, Pa.
Ross Heater & Mfg. Co., Inc., Buffalo, N. Y.
Schutte & Koerting Co., 1165 Thompson St., Philadelphia, Pa. See page 149.
Sims Co., Erie, Pa.
Southern Engine & Pump Co., Houston, Texas
Southwestern Engineering Co., Hollingsworth Bldg., Los Angeles, Cal. See page 109.
Tennant Co., Union National Bank Bldg., Houston, Texas.
Titusville Iron Works, Titusville, Pa.
Tulsa Boiler & Machinery Co., P. O. Box 1963, Tulsa, Okla.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
Whitlock Coil Pipe Co., Hartford, Conn.
York Manufacturing Co., York, Pa. See page 143.

IRON, Bar

Berger Mfg. Co., Canton, Ohio
Bethlehem Steel Co., Bethlehem, Pa.
Briggs Weaver Machinery Co., Dallas, Texas
Chattanooga Boiler & Tank Co., Box 316, Chattanooga, Tenn.
Colburn Gear & Mfg. Co., 98 Holmes St., Norfolk Downs, Mass.
John Dollinger, Jr., Inc., Box 423, Beaumont, Texas
Fort Worth Steel & Machinery Co., Fort Worth, Texas

Ellsworth Haning, 114-18 Liberty St., New York, N. Y.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Kansas City Structural Steel Co., Kansas City, Kansas.
North American Car Co., 327 S. LaSalle St., Chicago, Ill. See page 156.
Peden Iron & Steel Co., Houston Texas. See page 85.
Pioneer Tank & Boiler Co., Box 1926, Tulsa, Okla. See page 157.
A. R. Purdy Co., Inc., 790-4 Greenwich St., New York, N. Y.
Reading Iron Co., Reading, Pa.
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
Joseph T. Ryerson & Sons, 2558 W. 16th St., Chicago, Ill.
Sculley Steel & Iron Co., Chicago, Ill.
Union Iron Works, Selma, Ala.
United Iron Works Co., Ridge Arcade Bldg., Kansas, City, Mo. See page 161.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

IRON, Channel

Penn Metal Co., 675 Concord Ave. Cambridge, Mass.

IRON, Corrugated

Berger Mfg. Co., Canton, Ohio
Bethlehem Steel Co., Bethlehem Pa.
Continental Supply Co., St. Louis, Missouri
Fort Worth Steel & Machinery Co., Fort Worth, Texas
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Kansas City Structural Steel Co., Kansas City, Kansas.
Peden Iron & Steel Co., Houston Texas. See page 85.
Penn Metal Co., 675 Concord Ave., Cambridge, Mass.
A. R. Purdy Co., Inc., 790-4 Greenwich St., New York, N. Y.
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
Joseph T. Ryerson & Sons, 2558 W 16th St., Chicago, Ill.
Sculley Steel & Iron Co., Chicago, Ill.
United Alloy Steel Corp., Canton Ohio.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

IRON, Galvanized

Detroit Graphite Co. of Texas, 1500 2nd Nat. Bk. Bldg., Houston, Texas. See page 11.

IRON, Rolled

Glasgow Iron Co., Pottstown, Pa.

IRON, Sheet

American Rolling Mill Co., Middletown, Ohio

IRON, Stainless

Allegheny Steel Co., Pittsburgh, Pa

IRONS, Stay Bolt

Berger Mfg. Co., Canton, Ohio
Bethlehem Steel Co., Bethlehem, Pa.
Continental Supply Co., St. Louis, Missouri
John Dollinger, Jr., Inc., Box 423 Beaumont, Texas
Harrisburg Pipe & Pipe Bending Co., Houston, Texas
Heine Boiler Co., St. Louis, Mo.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
National Supply Co., Toledo, Ohio
Peden Iron & Steel Co., Houston Texas. See page 85.
Pioneer Tank & Boiler Co., Box 1926, Tulsa, Okla. See page 157.
A. R. Purdy Co., Inc., 790-4 Greenwich St., New York, N. Y.
Reading Iron Co., Reading, Pa.
Richmond Engineering Co., 935 Brook Ave., Box 514, Richmond, Virginia
Joseph T. Ryerson & Sons, 2558 W. 16th St., Chicago, Ill.
Sculley Steel & Iron Co., Chicago, Ill.
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
Union Iron Works, Selma, Ala.
United Alloy Steel Corp., Canton, Ohio.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

J

JACKS, Hydraulic

Briggs Weaver Machinery Co., Dallas, Texas
Continental Supply Co., St. Louis, Missouri
Richard Dudgeon, Inc., New York, N. Y.
F. W. Gartner Co., Houston, Texas.
A. L. Henderer's Sons, Maryland Ave., & Beech St., Wilmington, Delaware.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.

JARS, Hydrometer

Carbondale Machine Co., Carbondale, Pa.
Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
Continental Supply Co., St. Louis, Missouri
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Fort Worth Laboratories, 828½ Monore St., Fort Worth, Texas. See page 158.
Maintenance Eng. Corp., 1802 Conti St., Houston, Texas. See page 150.
Refinery Supply Co., Tulsa, Okla. See page 44.
Carl H. Wagner, 1944 W. Albany Ave., Chicago, Ill.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

JOINTS, Expansion

American District Steam Co., N. Tonawanda, N. Y.
R. V. Aycock Co., Kansas City, Mo.
Barco Mfg. Co., 1801 Winnemac Ave., Chicago, Ill.
H. Belfield Co., 435 N. Broad St., Philadelphia, Pa.
C. F. Braun & Co., Alhambra, Cal. See pages 78-79.
Briggs Weaver Machinery Co., Dallas, Texas
Continental Supply Co., St. Louis, Missouri
Finucane Boiler Works, Houston Texas.
F. W. Gartner Co., Houston, Texas.
Griscom-Russell Co., 285 Madison Ave., New York, N. Y. See page 133.
Gulf Coast Machine & Supply Co., Beaumont, Texas.
Joseph Oat & Sons, 232 Quarry St., Philadelphia, Pa.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Lunkenheimer Co., Cincinnati, Ohio. See page 17.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Pipe Bending Co., New Haven, Conn.
National Supply Co., Toledo, Ohio
National Valve & Mfg. Co., 31st and Liberty, Pittsburgh, Pa.
Oil Well Supply Co., Pittsburgh, Pa.
Philip Carey Co., Cincinnati, Ohio
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Philadelphia Coppersmithing Co., 222 N. Front St., Philadelphia Pa.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Joseph T. Ryerson & Sons, 2558 W. 16th St., Chicago, Ill.
John Simmons Co., 104-10 Center St., New York, N. Y.
Tennant Co., Union National Bank Bldg., Houston, Texas.
Walworth Company, 88 Pearl St. Boston, Mass.
Wheeler Condenser & Engineering Corp., 149 Broadway, N. Y., N.Y
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.

JOINTS, Flexible Ball

Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
Barco Mfg. Co., 1801 Winnemac Ave., Chicago, Ill.
Briggs Weaver Machinery Co., Dallas, Texas
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Walker Mfg. Co., Fenton, Mich.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.

JOINTS, Hot

Key Boiler & Equipment Co., 27th and McCasland, E. St. Louis, Ill

JOINTS, Swing

Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
Atlas Valve Co., 282 South St., Newark, N. J.
Barco Mfg. Co., 1801 Winnemac Ave., Chicago, Ill.
H. Belfield Co., 435 N. Broad St. Philadelphia, Pa.
Briggs Weaver Machinery Co., Dallas, Texas
Brooks Engineering Corp., 314 E 12th St., Los Angeles, Calif.
Continental Supply Co., St. Louis, Missouri
Gulf Coast Machine & Supply Co. Beaumont, Texas.
Lunkenheimer Co., Cincinnati Ohio. See page 17.
McDonald Mfg. Co., Dubuque, Ia. See back cover.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
National Transit Pump & Machine Co., Oil City, Pa.
Oil Conservation Engineering Co., Cleveland, Ohio. See page 4.
Oil Well Supply Co., Pittsburgh, Pa.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
John Simmons Co., 104-10 Center St., New York, N. Y.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

K

KETTLES, Compounding

Leader Iron Works, Decatur, Ill.

KETTLES, Lead Lined, Steam Jacketed

United Lead Co., 111 Broadway New York, N. Y.

KETTLES, Steam Jacketed

Aluminum Co. of America, 2400 Oliver Bldg., Pittsburgh, Pa.
The Barber Asphalt Co., 1600 Arch St., Philadelphia, Pa.
Blaw-Knox Co., Pittsburgh, Pa.
Butler Mfg. Co., 1124 Grand Ave., Kansas City, Mo.
Carleton Mace Engr. Co., 24 Dover St., Boston, Mass.
The Cullen Co., Clinton, Iowa
Erie City Iron Works, Erie, Pa.
Fort Worth Steel & Machinery Co. Fort Worth, Texas
Arthur Harris & Co., 212 Curtis St., Chicago, Ill.
Jewell Polar Co., 9 S. Clinton St. Chicago, Ill.
Kansas City Structural Steel Co., Kansas City, Kansas.
L. O. Koven & Brother, Inc., 154 Ogden Ave., Jersey City, N.J
McAleenan Bros. Co., Twenty-fifth and Railroad, Pittsburgh, Pa.
Milwaukee Boiler Mfg. Co., 35th St. & National Ave., Milwaukee, Wis.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
R. S. Newbold & Son Co., Norristown, Pa.
Joseph Oat & Sons, 232 Quarry St. Philadelphia, Pa.
Ocean Shore Iron Works, 550 Eighth St., San Francisco, Calif.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Philadelphia Coppersmithing Co., 222 N. Front St., Philadelphia Pa.
Pioneer Tank & Boiler Co., Box 1926, Tulsa, Okla. See page 157.
Prospect Boiler Co., Ward St. and Raritan River R. R., New Brunswick, N. J.
Quaker City Iron Works, Richmond & Tioga Sts., Philadelphia, Pa.
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
Sowers Mfg. Co., 1294 Niagara St., Buffalo, N. Y.
Sprague Foundry & Mfg. Co., P. O. Box 334, Council Bluffs, Iowa
M. H. Treadwell Co. of Ill., 208 S. La Salle St., Chicago, Ill.
Union Engineering Co., Cleveland, Ohio.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

L

LABORATORY, Apparatus

Audiffren Refrigerating Machine Co., 285 Madison Ave., New York, N. Y.
Beach-Russ Co., 30 Church St., New York, N. Y.
James G. Biddle, 1211-1213 Arch St., Philadelphia, Pa.
Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
The Denver Fire Clay Co., P. O. Box 1107 Denver, Colorado
Electric Tachometer Corp., 310 N. Eleventh St., Philadelphia, Pa.
Fort Worth Laboratories, 828½ Monroe St., Fort Worth, Texas. See page 158.
Greene Brothers, Wichita Falls, Texas. See page 61.
Griebel Instrument Co., Carbondale, Pa.
Arthur Harris & Co., 212 Curtis St., Chicago, Ill.
Hoskins Mfg. Co., 4437 Lawton Ave., Detroit, Mich.
Illinois Glass Co., Alton, Ill.
Maintenance Eng. Corp., 1802 Conti St., Houston, Texas. See page 150.
Philadelphia Coppersmithing Co., 222 N. Front St., Philadelphia, Pa.
Precision Scientific Co., 822 S. Tripp Ave., Chicago, Ill.
Premier Mill Corporation, Geneva New York.
Refinery Supply Co., Tulsa, Okla. See page 44.
C. J. Tagliabue Mfg. Co., 18 33rd St., Brooklyn, N. Y. See page 49.
Taylor Instrument Co., Rochester, N. Y. See page 160.
Arthur H. Thomas Co., W. Washington Square, Philadelphia, Pa.
Williams, Brown & Earle, 918 Chestnut St., Philadelphia, Pa. See page 149
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

LABORATORY, Supplies

Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Diamond Rubber Co., Inc., Akron, Ohio.
Ellsworth Haning, 114-18 Liberty St., New York, N. Y.
Fort Worth Laboratories, 828½ Monroe St., Fort Worth, Texas. See page 158.
Greene Brothers, Wichita Falls, Texas. See page 61.
Griebel Instrument Co., Carbondale, Pa.
Maintenance Eng. Corp., 1802 Conti St., Houston, Texas. See page 150.
Precision Securities Co., 822 S. Tripp Ave., Chicago, Ill.
Pyrolectric Instrument Co., Easton, Pa.
Refinery Supply Co., Tulsa, Okla. See page 44.
C. J. Tagliabue Mfg. Co., 18 33rd St., Brooklyn, N. Y. See page 49.
Williams, Brown & Earle, 918 Chestnut St., Philadelphia, Pa. See page 149
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

LACQUERS, all purpose

The Sherwin-Williams Co., 601 Canal Road, Cleveland, Ohio.

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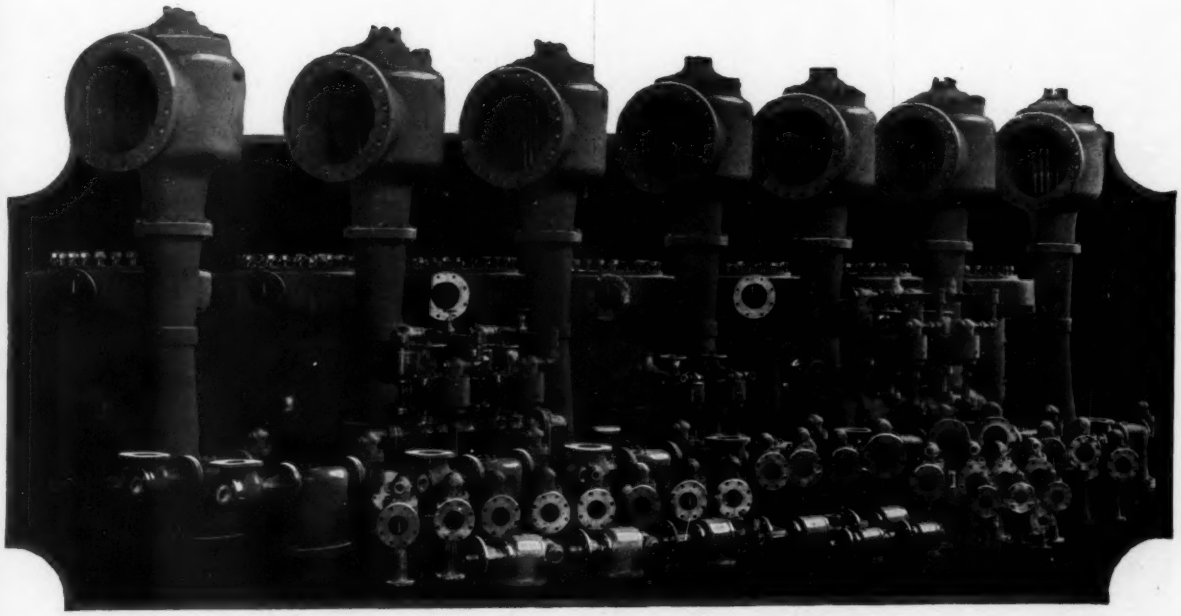

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LATHES

Axelson Machine Co., P. O. Box 316, Los Angeles, Calif.
Briggs Weaver Machinery Co., Dallas, Texas
Colburn Gear & Mfg. Co., 98 Holmes St., Norfolk Downs, Mass.
Gisholt Machine Co., Madison, Wis.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
National Supply Co., Toledo, Ohio
Peden Iron & Steel Co., Houston, Texas. See page 85.
Reed-Prentice Co., Worcester, Mass.
Joseph T. Ryerson & Sons, 2558 W. 16th St., Chicago, Ill.
John Steptoe Co., 2960 Colerain Ave, Cincinnati, Ohio
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

LEAD, Solder and Sheet

Briggs Weaver Machinery Co., Dallas, Texas
Continental Supply Co., St. Louis, Missouri
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Hoyt Metal Co., Boatman's Bank Bldg., St. Louis, Mo.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
Peden Iron & Steel Co., Houston Texas. See page 85.
Union Iron Works, Selma, Ala.
Woodward, Wight & Co., Ltd New Orleans, La. See page 153.

LEAD PIGMENTS

The Eagle-Picher Lead Co., 208 S. LaSalle St., Chicago, Ill.

LEATHER, Hydraulic

Briggs Weaver Machinery Co., Dallas, Texas
Stewart R. Browne Mfg. Co., New York, N. Y.
Chicago Belting Co., 125 N. Green, Chicago, Ill.
Chicago Rawhide Mfg. Co., 127 Elston Ave., Chicago, Ill.
Curtin Mill Supply Co., 17 N Louisiana St., Houston, Texas. See page 160.
Grand Rapids Belting Co., 1-3 Ionia Ave., Grand Rapids, Mich.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
E. F. Houghton & Co., Philadelphia, Pa.
Hydraulic Press Mfg. Co., Mt Gilead, Ohio.
Edward R. Ladew Co., 29 Murray St., New York, N Y.
Lawrence Belting Co., Inc., 113 Chambers St., New York, N. Y.
Mabbs Hydaulic Packing Co., 431 S. Dearborn St., Chicago, Ill.
Rahmann, Geo., & Co., 31 Spruce St., New York, N. Y.
J. E. Rhoads & Sons, 35 N. Sixth St., Philadelphia, Pa.
Chas. A. Schieren Co., 77 Ferry St. New York, N. Y.
Schwartz Belting Co., 76 Murray St., New York, N. Y.
Texas Belting Co., Houston, Texas
Union Belt Co., 66 Troy St., Fall River, Mass.
Warren Belting Co., 33 Artic St., Worcester, Mass.
I. B. Williams & Sons, 9 Orchard St., Dover, N. H.
Woodward, Wight & Co., Ltd New Orleans, La. See page 153

LEATHER, Lace

Briggs Weaver Machinery Co., Dallas, Texas
Chicago Belting Co., 125 N. Green Chicago, Ill.
Chicago Rawhide Mfg. Co., 127 Elston Ave., Chicago, Ill.
Curtin Mill Supply Co., 17 N Louisiana St., Houston, Texas. See page 160.
Grand Rapids Belting Co., 1-3 Ionia Ave., Grand Rapids, Mich.
The Graton & Knight Mfg. Co., 35 Franklin St., Worcester, Mass. geles, Calif.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
E. F. Houghton & Co., Philadelphia, Pa.
Edward R. Ladew Co., 29 Murray St., New York, N Y.
Lawrence Belting Co., Inc., 113 Chambers St., New York, N. Y
McCauley Belting Co., 412-430 Orleans St., Chicago, Ill.
Milwaukee Leather Belting Co., 352 E. Water St., Milwaukee, Wis.
Missouri Belting Co., 1021-1028 S Grand Ave., St. Louis, Mo.
Moloney Belting Co., 130 N. Franklin St., Chicago, Ill.
Monarch Belting Co., 1270 Ontario St., Cleveland, Ohio.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
Oil Well Supply Co., Pittsburgh, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Rahmann, Geo., & Co., 31 Spruce St., New York, N. Y.
J. E. Rhoads & Sons, 35 N. Sixth St., Philadelphia, Pa.
Chas. A. Schieren Co., 77 Ferry St. New York, N. Y.
Schwartz Belting Co., 76 Murray St., New York, N. Y.
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
Texas Belting Co., Houston, Texas
Union Belt Co., 66 Troy St., Fall River, Mass.
Union Iron Works, Selma, Ala.
Warren Belting Co., 33 Artic St. Worcester, Mass.
Western Rawhide & Belting Co. 901-35 Winnebago St., Milwaukee Wis.
I. B. Williams & Sons, 9 Orchard St., Dover, N. H.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.

LEATHER, Pump

Briggs Weaver Machinery Co., Dallas, Texas
Stewart R. Browne Mfg. Co., New York, N. Y.
Chicago Belting Co., 125 N. Green Chicago, Ill.
Chicago Rawhide Mfg. Co., 127 Elston Ave., Chicago, Ill.
Curtin Mill Supply Co., 17 N Louisiana St., Houston, Texas. See page 160.
Garlock Packing Co., 50 Main St. Palmyra, N. Y. See page 67.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
E. F. Houghton & Co., Philadelphia, Pa.
Hydraulic Press Mfg. Co., Mt Gilead, Ohio.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Judd & Leland Mfg. Co., Clifton Springs, N. Y.
Edward R. Ladew Co., 29 Murray St., New York, N Y.
Lawrence Belting Co., Inc., 113 Chambers St., New York, N. Y.
Mabbs Hydaulic Packing Co., 431 S. Dearborn St., Chicago, Ill.
Milwaukee Leather Belting Co., 352 E. Water St., Milwaukee, Wis.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
Peden Iron & Steel Co., Houston, Texas. See page 85.
J. E. Rhoads & Sons, 35 N. Sixth St., Philadelphia, Pa.
Chas. A. Schieren Co., 77 Ferry St. New York, N. Y.
Schwartz Belting Co., 76 Murray St., New York, N. Y.
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
Southern Engine & Pump Co., Houston, Texas
Texas Belting Co., Houston, Texas
Union Belt Co., 66 Troy St., Fall River, Mass.
Warren Belting Co., 33 Artic St., Worcester, Mass.
I. B. Williams & Sons, 9 Orchard St., Dover, N. H.
Woodward, Wight & Co., Ltd New Orleans, La. See page 153.

LESSORS, Tank Car

Chicago Steel Car Co., Chicago, Ill See page 141.

LIDS, Journal Box

Allegheny Steel Co., Pittsburgh, Pa

LIGHTING, Equipment

The Alexander Milburn Co., 1410 W. Baltimore St., Baltimore, Md
Beardslee Chandelier Mfg. Co., Chicago, Ill.
Carleton Mace Engr. Corp., 242 Dover St., Boston, Mass.
Langstadt-Meyer Co., Appleton, Wis.
Maintenance Eng. Corp., 1802 Conti St., Houston, Texas
Peden Iron & Steel Co., Houston Texas. See page 85.
Precision Scientific Co., 820 S. Tripp Ave., Chicago, Ill.
The Pyle-National Co., Chicago, Ill
Southern Engine & Pump Co., Houston, Texas
Universal Motor Co., 39 Ceape St. Oshkosh, Wis.
Western Electric Company, Austin and Wood Sts., Dallas, Texas.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
Woodward, Wight & Co., Ltd New Orleans, La. See page 153.

LIGHTING PLANTS

Langstadt-Meyer Co., Appleton Wis.

LIGHTS, Carbide

The Alexander Milburn Co., 1410 W. Baltimore St., Baltimore, Md.

LIGHTS, Feed

Precision Scientific Co., 820 S. Tripp Ave., Chicago, Ill.

LIGHTS, Flood

The Alexander Milburn Co., 1410 W. Baltimore St., Baltimore, Md.
Carbic Mfg. Co., Duluth, Minn.
Cook Motor Co., Delaware, Ohio.
General Electric Co., Schenectady, New York
Langstadt-Meyer Co., Appleton, Wis.
MacLeod Company, Cincinnati, Ohio
Maintenance Eng. Corp., 1802 Conti St., Houston, Texas. See page 150.
National Supply Co., Toledo, Ohio
Peden Iron & Steel Co., Houston, Texas. See page 85.
The Pyle-National Co., Chicago, Ill.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.

LIGHTS, Gauge

Roberts Steam Specialty Co., 5318 St. Clair Ave., Cleveland, Ohio

LIGHTS, Portable

The Alexander Milburn Co., 1410 W. Baltimore St., Baltimore, Md
Breeze Metal Hose & Mfg. Co. 22-46 S. 6th St., Newark, N. J
Carbic Mfg. Co., Duluth, Minn.
Heer Gas & Oil Engine Co., Portsmouth, Ohio.
Langstadt-Meyer Co., Appleton, Wis.
MacLeod Company, Cincinnati, Ohio
Maintenance Eng. Corp., 1802 Conti St., Houston, Texas. See page 150.
Peden Iron & Steel Co., Houston Texas. See page 85.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.

LIGHTS, Pump

Petroleum Supply Co., Houston Texas

LIGHTS, Water Gauge

Cleveland Flue Cleaner Mfg. Co., 5318 St. Clair Ave., Cleveland, O.

LINERS, Pump

Barnhart-Davis Co., Warren, Pa.
Continental Supply Co., St. Louis, Missouri
Greene Brothers, Wichita Falls, Texas. See page 61.
Gulf Coast Machine & Supply Co., Beaumont, Texas.
Moloch Co., Kaukauna, Wis.
National Supply Co., Toledo, Ohio
National Transit Pump & Machine Co., Oil City, Pa.
Joseph Oat & Sons, 232 Quarry St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Philadelphia Coppersmithing Co., 222 N. Front St., Philadelphia Pa.
Republic Rubber Co., Youngstown, Ohio
Southern Brass Mfg. Co., Houston, Texas.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

LINES, Oil

Shevlin Engineering Co., Inc., 259 W. 34th St., New York, N. Y.

LINING, Brake

General Asbestos & Rubber Co., Charleston, S. C.

LINING, Flue

W. S. Dickey Clay Mfg. Co., Texarkana, Texas

LININGS, Furnace

Barnhart-Davis Co., Warren, Pa.
Botfield Refractories Co., Swanson & Clymer Sts., Philadelphia, Pa.
Celite Products Co., 1320 S. Hope St., Los Angeles, Calif. See front cover.
Chicago Retort & Fire Brick Co., 208 S. La Salle St., Chicago, Ill.
Eureka Fire Brick Works, 1507 First Nat. Bank Bldg., Pittsburgh, Pa.
McLeod & Henry Co., Troy, N. Y.
Norristown Mangesia & Asbestos Co., Norristown, Pa.
S. Obermayer Co., 2563 W. 18th St. Chicago, Ill.
Peerless Co. of America, 1112 W. 37th St., Chicago, Illinois
Standard Fuel Engr'g Co., 667-687 Post Ave., So. Detroit, Mich.

LOCKERS

Berger Mfg. Co., Canton, Ohio
Brazelton, Wessendorff & Nelms, Houston, Texas
Dexter Metal Mfg. Co., 10 So. 18th St., Philadelphia, Pa.
Lyon Metallic Mfg. Co., Aurora, Ill.
Fred Medart Mfg. Co., 3535 DeKalb St., St. Louis, Mo.
Penn Metal Co., 675 Concord Ave., Cambridge, Mass.
Terrell's Equipment Co., Grand Rapids, Mich.
United Alloy Steel Corp., Canton, Ohio.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

LUBRICATORS

Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
American Lubricator Co., Detroit, Mich.
Briggs Weaver Machinery Co., Dallas, Texas
Continental Supply Co., St. Louis, Missouri
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Detroit Lubricator Co., 5938 Trumbull Ave., Detroit, Mich.
Essex Brass Corp., 2000 Franklin St., Detroit, Mich.
Greene Brothers, Wichita Falls, Texas. See page 61.
Kelly and Jones Co., Greensburg, Pa. See page 75.
Lukenheimer Co., Cincinnati, Ohio. See page 17.
Madison-Kipp Corp., Madison, Wis.
Maintenance Co., Inc., 449-53 W. Forty-Second St., N. Y., N. Y.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
McCord Radiator & Mfg. Co., 2587 E. Grand Blvd., Detroit, Mich.
Michigan Lubricator Co., 3643 Beaubien St., Detroit, Mich.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Wm. W. Nugent & Co., 410-412 No. Hermitage Ave., Chicago, Ill.
Oil Well Supply Co., Pittsburgh, Pa.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Penberthy Injector Co., 340 Holden Ave., Detroit, Mich.
Plouff Co., 170 Summer St., Boston, Mass.
Wm. Powell Co., Cincinnati, Ohio
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Union Iron Works, Selma. Ala.
Walworth Company, 88 Pearl St., Boston, Mass.
D. T. Williams Valve Co., Spring Grove Ave. & Township St., Cincinnati, Ohio. See page 35.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

LUBRICATORS, Force Feed

Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
Bowser, S. F., & Co., Inc., 1230 Bowser Ave., Fort Wayne, Ind.

Briggs Weaver Machinery Co., Dallas, Texas
Continental Supply Co., St. Louis, Missouri
Greene Brothers, Wichita Falls, Texas. See page 61.
Heer Gas & Oil Engine Co., Portsmouth, Ohio.
Hills-McCanna Co., 2025 Elston Ave., Chicago, Ill.
Paul B. Huyette Co., Inc., 5 South Eighteenth St., Philadelphia, Pa.
Lunkenheimer Co., Cincinnati, Ohio. See page 17.
Madison-Kipp Corp., Madison, Wis.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
Manzel Bros., Co., 309 to 319 Babcock St., Buffalo, N. Y.
McCord Radiator & Mfg. Co., 2587 E. Grand Blvd., Detroit, Mich.
McCullough Mfg. Co., 2632-34 Central Ave., Minneapolis, Minn.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Wm. W. Nugent & Co., 410-412 No. Hermitage Ave., Chicago, Ill.
Oil Well Supply Co., Pittsburgh, Pa.
Plouff Co., 170 Summer St., Boston, Mass.
Wm. Powell Co., Cincinnati, Ohio
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Union Iron Works, Selma, Ala.
Walworth Company, 88 Pearl St., Boston, Mass.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.

LUBRICATORS, Graphite

Briggs Weaver Machinery Co., Dallas, Texas
Essex Brass Corp., 2000 Franklin St., Detroit, Mich.
Lunkenheimer Co., Cincinnati, Ohio. See page 17.
National Supply Co., Toledo, Ohio
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Ohio Injector Co., S. Main St., Wadsworth, Ohio.
Oil Well Supply Co., Pittsburgh, Pa.
Plouff Co., 170 Summer St., Boston, Mass.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.

LUBRICATORS, Sight Feed

American Lubricator Co., Detroit, Mich.
Bowser, S. F., & Co., Inc., 1230 Bowser Ave., Fort Wayne, Ind.
Briggs Weaver Machinery Co., Dallas, Texas
Continental Supply Co., St. Louis, Missouri
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Detroit Lubricator Co., 5938 Trumbull Ave., Detroit, Mich.
Essex Brass Corp., 2000 Franklin St., Detroit, Mich.
Greene Brothers, Wichita Falls, Texas. See page 61.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Jarecki Mfg. Co., Erie, Pa.
Kelly and Jones Co., Greensburg, Pa. See page 75.
Lunkenheimer Co., Cincinnati, Ohio. See page 17.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
McCord Radiator & Mfg. Co., 2587 E. Grand Blvd., Detroit, Mich.
McCullough Mfg. Co., 2632-34 Central Ave., Minneapolis, Minn.
Michigan Lubricator Co., 3643 Beaubien St., Detroit, Mich.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Wm. W. Nugent & Co., 410-412 No. Hermitage Ave., Chicago, Ill.
Ohio Injector Co., S. Main St., Wadsworth, Ohio.
Oil Well Supply Co., Pittsburgh, Pa.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Plouff Co., 170 Summer St., Boston, Mass.
Wm. Powell Co., Cincinnati, Ohio
Star Brass Mfg. Co., 53 Oliver St., Boston, Mass.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Union Iron Works, Selma, Ala.
Walworth Company, 88 Pearl St., Boston, Mass.
D. T. Williams Valve Co., Spring Grove Ave. & Township St., Cincinnati, Ohio. See page 35.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

LUGS, Boiler

Glasgow Iron Co., Pottstown, Pa.

LUMBER, Hard Asbestos

Philip Carey Co., Cincinnati, Ohio

M

MACHINES, Barrel Washing

Weimar Engineering Works, Westmoreland & Jasper Sts., Philadelphia, Pa.

MACHINES, Drilling

Ingersoll Milling Machine Co., Rockford, Ill.

MACHINES, Drum Washing

Weimar Engineering Works, Westmoreland & Jasper Sts., Philadelphia, Pa.

MACHINES, Milling

Ingersoll Milling Machine Co., Rockford, Ill.
Reed-Prentice Co., Worcester, Mass.
John Steptoe Co., 2960 Colerain Ave, Cincinnati, Ohio

MACHINES, Pipe

Oster Mfg. Co., 2057 E. Sixty-First Place, Cleveland, Ohio

MACHINES, Pipe Bending

Baker Ice Machine Co., 3601 Evans St., Omaha, Nebr.
R. S. Newbold & Son Co., Norristown, Pa.

MACHINES, Pipe Threading and Cutting

Merrell Mfg. Co., 873 Curtis St., Toledo, Ohio.
Standard Engineering Co., Ellwood City, Pa.

MACHINES, Valve Reseating

The Lagonda Mfg. Co., Springfield, Ohio
Levitt Machine Co., Orange, Mass

MACHINERY, Can Closing

Max-Ams Machine Co., 101 Park Ave., New York, N. Y.

MACHINERY, Can Making

Max-Ams Machine Co., 101 Park Ave., New York, N. Y.

MACHINERY, Elevating and Conveying

Jeffrey Mfg. Co., 904-99 No. Fourth St., Columbus, Ohio.

MACHINERY, Special

A. & F. Brown Co., 79 Barclay St., New York, N. Y.
P. H. Gill & Sons Forge & Machine Works, 2 Lorraine St., Brooklyn, N. Y.

MACHINERY, Steel Drum and Barrel

Max-Ams Machine Co., 101 Park Ave., New York, N. Y.

MAGNESIA

Philip Carey Co., Cincinnati, Ohio

MAGNETS, Lifting

Electric Controller & Mfg. Co., 2700 E. Seventy-Ninth St., Cleveland, Ohio.

MAGNETOS, Blasting

Davis Instrument Mfg. Co., 110 W. Fayette St., Baltimore, Md.

MANHEADS, Roof

Oil Conservation Engineering Co., Cleveland, Ohio. See page 4.

MAN-HOLES

Glasgow Iron Co., Pottstown, Pa.

MANIFOLDS

The Alexander Milburn Co., 1416 W. Baltimore St., Baltimore, Md.
Barnhart-Davis Co., Warren, Pa.
Burdett Mfg. Co., 309 St. Johns Court, Chicago, Ill.
Continental Supply Co., St. Louis, Missouri
Fort Worth Steel & Machinery Co., Fort Worth, Texas
Gulf Coast Machine & Supply Co., Beaumont, Texas.
Hershey Machine & Foundry Co., Manheim, Pa.
Hughes Tool Co., 300 Hughes St., Houston, Texas. See insert.
McEwen Bros., Wellsville, N. Y.
Midwest Piping & Supply Co., Second & Miller Sts., St. Louis, Mo. See page 41.
National Supply Co., Toledo, Ohio
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston Texas. See page 85.
Pittsburgh Pipe Coil & Bending Co., 61 Bridge St., Etna, Pa.
Reading Steel Castings Co., Reading, Pa.
Joseph Reid Gas Engine Co., Oil Pa.
Richmond Engineering Co. 935. Brook Ave., Box 514, Richmond, Va.
Torchweld Equipment Co., 224 No. Carpenter St., Chicago, Ill.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Walworth Company, 88 Pearl St., Boston, Mass.
Western Iron & Foundry Co., Wichita, Kansas. See page 89.

MANIFOLDS, Oxygen

Air Reduction Sales Corp., 342 Madison Ave., New York, N. Y.

MANIFOLDS, Oxygen and Acety-Lene

Modern Engineering Co., 3411-13 Pine Blvd., St. Louis, Mo. See page 141.

MANIFOLDS Welding

Smiths Inventions, Inc., 2636 Fourth St., S.E., Minneapolis, Minn.

MANOMETERS

The American Blower Co., 6004 Russell, Detroit, Mich.
Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Defender Automatic Regulator Co., 709 Pine St., St. Louis, Mo.
Fort Worth Laboratories, 828½ Monroe St., Fort Worth, Texas. See page 158.
Greene Brothers, Wichita Falls, Texas. See page 61.
Meriam Co., 8405 Detroit Ave., Cleveland, Ohio
Lee B. Mettler Co., 406 S. Main St., Los Angeles, Calif. See page 156.
Refinery Supply Co., Tulsa, Okla. See page 44.
Republic Flow Meters Co., 2236 Diversey Parkway, Chicago, Ill.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Simplex Valve & Meter Co., 2005 S. 68th St., Philadelphia, Pa.
Taylor Instrument Co., Rochester, N. Y. See page 150.
Williams, Brown & Earle, 918 Chestnut St., Philadelphia, Pa. See page 149
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

MASKS, Babbitting

Pulmosan Safety Equipment Co., 45 Willoughby So., Brooklyn, New York. See page 159.

MASKS, Gas

Briggs Weaver Machinery Co., Dallas, Texas
Carbondale Machine Co., Carbondale, Pa.
Greene Brothers, Wichita Falls, Texas. See page 61.
Improved Aluminum Gaso Protector Co., 7216 Ridge Blvd., Chicago, Ill.
Mine Saftey Appliances Co., 908-12 Chamber of Commerce Bldg., Pittsburgh, Pa. See page 162.
Pulmosan Safety Equipment Co., 45 Willoughby St., Brooklyn, New York. See page 159.
Refinery Supply Co., Tulsa, Okla. See page 44.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

MASKS, Hose

Greene Brothers, Wichita Falls, Texas. See page 61.
Improved Aluminum Gaso Protector Co., 7216 Ridge Blvd., Chicago, Ill.
Mine Saftey Appliances Co., 908-12 Chamber of Commerce Bldg., Pittsburgh, Pa. See page 162.
Pulmosan Safety Equipment Co., 45 Willoughby St., Brooklyn, New York. See page 159.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

MATERIALS, Pipe Covering

Acme Asbestos Cov. & Supply Co., 242 N. Elizabeth St., Chicago, Ill.
Armstrong Cork & Insulation Co., Pittsburgh, Pa.
Armstrong Machinery Co., 3201-19 E. Riverside, Spokane, Wash.
Banner Rock Products Co., Alexandria, Ind.
W. S. Dickey Clay Mfg. Co., Texarkana, Texas
Ehret Magnesia Mfg. Co., 20 E. Jackson Blvd., Chicago, Ill.
Ehrot Magnesia Mfg. Co., Valley Forge, Pa.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Keasbey & Mattison Co., Ambler, Pa.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Nitingale & Childs Co., 195 Albany St., Cambridge Sta., Boston, Mass.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Philip Carey Co., Cincinnati, Ohio
Rogers Asbestos Co., Houston, Texas.
Standard Asbestos Mfg. Co., 820-22 West Lake St., Chicago, Ill.
Union Fibre Co., Winona, Minn.
Walworth Company, 88 Pearl St., Boston, Mass.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

MERCURY

Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
Fort Worth Laboratories, 828½ Monroe St., Fort Worth, Texas. See page 158.
Greene Brothers, Wichita Falls, Texas. See page 61.
Henry J. Green, 1191 Bedford Ave., Brooklyn, N. Y.
Refinery Supply Co., Tulsa, Okla. See page 44.

METAL, Ignition

Ellsworth Haning, 114-18 Liberty St., New York, N. Y.

METAL, Sheet

American Brass Co., Waterbury, Conn.

METAL, Welding

Plouff Co., 170 Summer St., Boston, Mass.

METAL WORK, General Sheet

E. Van Noorden Co., 100 Magazine St. Roxbury, Mass.

METERS, Air

Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
Chas. J. Clark Blast Meter Co., Gladbrook, Iowa.
The Cochrane Corp., 3130 N. 17th St., Philadelphia, Pa.
Connersville Blower Co., Connersville, Ind.
Continental Supply Co., St. Louis, Missouri
Equitable Meter and Mfg. Co., 422-444 First Ave., Pittsburgh, Pa.
Fort Worth Laboratories, 828½ Monroe St., Fort Worth, Texas. See page 158.
Henry J. Green, 1191 Bedford Ave., Brooklyn, N. Y.
Greene Brothers, Wichita Falls, Texas. See page 61.
Metric Metal Works, Erie, Pa. See pages 70-71.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Republic Flow Meters Co., 2236 Diversey Parkway, Chicago, Ill.
The P. H. & F. M. Roots Co., Connersville, Ind. See inside front cover.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

METERS, Combustion

Jos. W. Hays Corp., 1042 E. 8th St., Michigan City, Ind.

METERS, Condensation

American District Steam Co., N. Tonawanda, N. Y.

METERS, Differential Flow

Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
Chas. J. Clark Blast Meter Co., Gladbrook, Iowa.
The Cochrane Corp., 3130 N. 17th St., Philadelphia, Pa.
Fort Worth Laboratories, 828½ Monroe St., Fort Worth, Texas. See page 158.
Greene Brothers, Wichita Falls, Texas. See page 61.
Meriam Co., 8405 Detroit Ave., Cleveland, Ohio
Metric Metal Works, Erie, Pa. See pages 70-71.
Republic Flow Meters Co., 2236 Diversey Parkway, Chicago, Ill.
Simplex Valve & Meter Co., 2005 S. 68th St., Philadelphia, Pa.
Thermal Efficiency Co., 1210 Scarritt Bldg., Kansas City, Mo. See page 113.

METERS, Electrical

Cutler-Hammer Mfg. Co., Milwaukee, Wis.
The Esterline-Angus Co., P. O. Box 596, Indianapolis, Ind.
Greene Brothers, Wichita Falls, Texas. See page 61.
Illinois Testing Laboratories, Inc., 141-143 W. Austin Ave., Chicago, Ill.
Langstadt-Meyer Co., Appleton, Wis.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

METERS, Flow

Briggs Weaver Machinery Co., Dallas, Texas
Brown Instrument Co., 4537 Wayne Ave., Philadelphia, Pa.
Buffalo Meter Co., 2917 Main St., Buffalo, N. Y.
The Cochrane Corp., 3130 N. 17th St., Philadelphia, Pa.
Fort Worth Laboratories, 828½ Monroe St., Fort Worth, Texas. See page 158.
General Electric Co., Schenectady, New York
Greene Brothers, Wichita Falls, Texas. See page 61.
Horton Machine Works, 4th & Magee Sts., Elmira, N. Y.
Paul B. Huyette Co., Inc., 5 South Eighteenth St., Philadelphia, Pa.
Keuffel & Esser Co., Hoboken, N. J.
Meriam Co., 8405 Detroit Ave., Cleveland, Ohio
Metric Metal Works, Erie, Pa. See pages 70-71.
National Meter Co., 299 Broadway, New York, N. Y. See page 149
H. A. Paine Co., 419-20 Cotton Exchange Bldg., Houston, Texas.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Republic Flood Meter Co., 2236 Dwersey Parkway, Chicago, Ill.
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
St. Louis Pump & Equipment Co., St. Louis, Mo.
Thermal Efficiency Co., 1210 Scarritt Bldg., Kansas City, Mo. See page 113.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.

METERS, Gas

Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
Chas. J. Clark Blast Meter Co., Gladbrook, Iowa.
The Cochrane Corp., 3130 N. 17th St., Philadelphia, Pa.
Connersville Blower Co., Connersville, Ind.
Continental Supply Co., St. Louis, Missouri
Equitable Meter and Mfg. Co., 422-444 First Ave., Pittsburgh, Pa.
Fort Worth Laboratories, 828½ Monroe St., Fort Worth, Texas. See page 158.
The Foxboro Co., Inc., Foxboro, Mass. See page 155.
Greene Brothers, Wichita Falls, Texas. See page 61.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
Metric Metal Works, Erie, Pa. See pages 70-71.
Oil Well Supply Co., Pittsburgh, Pa.
Precision Scientific Co., 820 S. Tripp Ave., Chicago, Ill.
Refinery Supply Co., Tulsa, Okla. See page 44.
Republic Flow Meters Co., 2236 Diversey Parkway, Chicago, Ill.
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
The P. H. & F. M. Roots Co., Connersville, Ind. See inside front cover.
Westcott & Greis, Inc., Tulsa, Okla. See page 15.
Western Gas Construction Co., Fort Wayne, Ind.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

METERS, Gasoline

Briggs Weaver Machinery Co., Dallas, Texas
Buffalo Meter Co., 2917 Main St., Buffalo, N. Y.
The Cochrane Corp., 3130 N. 17th St., Philadelphia, Pa.
Greene Brothers, Wichita Falls, Texas. See page 61.
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.
Metric Metal Works, Erie, Pa. See pages 70-71.
National Meter Co., 299 Broadway, N. Y. See page 149.
National Supply Co., Toledo, Ohio
Neptune Meter Co., 50 E. 42nd St., New York City, N. Y.
Refinery Supply Co., Tulsa, Okla. See page 44.
Republic Flow Meters Co., 2236 Diversey Parkway, Chicago, Ill.
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
Standard Fuel Engr'g Co., 667-687 Post Ave., So. Detroit, Mich.
Union Water Meter Co., Worcester, Mass.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.

METERS, Oil

W. N. Best Furnace & Burner Corp., 11 Broadway, New York New York.
Briggs Weaver Machinery Co., Dallas, Texas
Buffalo Meter Co., 2917 Main St. Buffalo, N. Y.
The Cochrane Corp., 3130 N. 17th St., Philadelphia, Pa.
Connersville Blower Co., Connersville, Ind.
Continental Supply Co., St. Louis, Missouri
Fort Worth Laboratories, 828½ Monroe St., Fort Worth, Texas. See page 158.
Greene Brothers, Wichita Falls, Texas. See page 61.
Hofmann Engineering Co., 557-9 W. Quincy St., Chicago, Ill.
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
Metric Metal Works, Erie, Pa. See pages 70-71.
National Airoil Burner Co., 9th and Thompson Sts., Philadelphia, Pa. See page 20.
National Meter Co., 299 Broadway, New York, N. Y. See page 149.
National Supply Co., Toledo, Ohio
Neptune Meter Co., 50 E. 42nd St. New York City, N. Y.
Oil Well Supply Co., Pittsburgh, Pa.
Peden Iron & Steel Co., Houston Texas. See page 85.
Refinery Supply Co., Tulsa, Okla. See page 44.
Republic Flow Meters Co., 2236 Diversey Parkway, Chicago, Ill.
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond Va.
Rogers-Higgins Co., Inc., Canal Commercial Bldg., New Orleans, La.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Simplex Valve & Meter Co., 2005 S. 68th St., Philadelphia, Pa.
St. Louis Pump & Equipment Co., St. Louis, Mo.
Standard Fuel Engr'g Co., 667-687 Post Ave., So. Detroit, Mich.
Union Water Meter Co., Worcester, Mass.
Western Gas Construction Co., Fort Wayne, Ind.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

METERS, Pipe Line

National Meter Co., 299 Broadway, New York, N. Y. See page 149.

METERS, Water

Briggs Weaver Machinery Co., Dallas, Texas
Buffalo Meter Co., 2917 Main St., Buffalo, N. Y.
Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
The Cochrane Corp., 3130 N. 17th St., Philadelphia, Pa.
Continental Supply Co., St. Louis, Missouri
Greene Brothers, Wichita Falls, Texas. See page 61.
Hoppes Mfg. Co., 19 Larch St., Springfield, Ohio.
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
Metric Metal Works, Erie, Pa. See pages 70-71.
National Meter Co., 299 Broadway, New York, N. Y. See page 149.
National Supply Co., Toledo, Ohio
Neptune Meter Co., 50 E. 42nd St., New York City, N. Y.
Oil Well Supply Co., Pittsburgh, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Refinery Supply Co., Tulsa, Okla. See page 44.
Republic Flow Meters Co., 2236 Diversey Parkway, Chicago, Ill.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
John Simmons Co., 104-10 Center St., New York, N. Y.
Simplex Valve & Meter Co., 2005 S. 68th St., Philadelphia, Pa.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Thermal Efficiency Co., 1210 Scarritt Bldg., Kansas City, Mo. See page 113.
Union Water Meter Co., Worcester, Mass.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
Wilcox Engineering Co., 900 South Warren Ave., Saginaw, Mich.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.

METERS, Steam and Water

The Cochrane Corp., 3130 N. 17th St., Philadelphia, Pa.
Greene Brothers, Wichita Falls, Texas. See page 61.
Paul B. Huyette Co., Inc., 5 South Eighteenth St., Philadelphia, Pa.
Metric Metal Works, Erie, Pa. See pages 70-71.
Neptune Meter Co., 50 E. 42nd St., New York City, N. Y.
Peden Iron & Steel Co., Houston Texas. See page 85.
Republic Flow Meters Co., 2236 Diversey Parkway, Chicago, Ill.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Thermal Efficiency Co., 1210 Scarritt Bldg., Kansas City, Mo. See page 113.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

METERS, Wide-Range

Metric Metal Works, Erie, Pa. See pages 70-71.
Neptune Meter Co., 50 E. 42nd St., New York City, N. Y.

MICROSCOPES

Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
The Denver Fire Clay Co., P. O. Box 1107 Denver, Colorado
Greene Brothers, Wichita Falls, Texas. See page 61.
Arthur H. Thomas Co., W. Washington Square, Philadelphia, Pa.

MILLS, Boring & Runging, Vertical

H. Bickford & Co., Lakeport, N.H.
La Favorite Rubber Mfg. Co., Wagaraw Rd., Hawthorne, N. J.

MILLS, Colloid and Emulsion

Premier Mill Corporation, Geneva New York.

MILLS, Pebble Paint Grinding

Beach-Russ Co., 30 Church St., New York, N. Y.

MILLBOARD, Asbestos

Anchor Packing Co., Lafayette Bldg., Philadelphia, Pa.
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Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
Ehret Magnesia Mfg. Co., 20 E. Jackson Blvd., Chicago, Ill.
Eureka Packing Co., 78-80 Murray St., New York, N. Y.
Greene Brothers, Wichita Falls, Texas. See page 61.
Metallo Gasket Co., New Brunswick, N. J. See page 158.
National Supply Co., Toledo, Ohio
Norristown Mangesia & Asbestos Co., Norristown, Pa.
Oil Well Supply Co., Pittsburgh, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Philip Carey Co., Cincinnati, Ohio
Rogers Asbestos Co., Houston, Texas.
Union Iron Works, Selma, Ala.
Walworth Company, 88 Pearl St., Boston, Mass.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

MINERAL WOOL

Norristown Mangesia & Asbestos Co., Norristown, Pa.

MIXERS

Sowers Mfg. Co., 1294 Niagara St., Buffalo, N. Y.

MOTORS

Louis Allis Co., 133 Stewart St., Milwaukee, Wis.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Brazelton, Wessendorff & Nelms, Houston, Texas
Briggs Weaver Machinery Co., Dallas, Texas
Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
Continental Supply Co., St. Louis, Missouri
Crocker-Wheeler Electric Mfg. Co., Ampere, N. J.
Engberg's Electric & Mechanical Works, 268 Vine St., St. Joseph, Mich.
Fairbanks, Morse & Co., 900 S. Wabash Ave., Chicago, Ill.
Fidelity Electric Co., 331 No. Arch St., Lancaster, Pa.
F. W. Gartner Co., Houston, Texas.
General Electric Co., Schenectady, New York
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Houston Armature Works, Houston, Texas
Langstadt-Meyer Co., Appleton, Wis.
Maintenance Co., Inc., 449-53 W. Forty-Second St., N. Y., N. Y.
National Supply Co., Toledo, Ohio
Peden Iron & Steel Co., Houston, Texas. See page 85.
The Randle Machinery Co., 1723 Power St., Cincinnati, Ohio
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
Roth Bros. & Co., 1400 W. Adams St., Chicago, Ill
Joseph T. Ryerson & Sons, 2558 W. 16th St., Chicago, Ill.
Southern Engine & Pump Co., Houston, Texas
Tennant Co., Union National Bank Bldg., Houston, Texas.
Triumph Electric Co., Cincinnati, Ohio
B. A. Wesche Electric Co., 1628 Vine St., Cincinnati, Ohio.
Western Electric Company, Austin and Wood Sts., Dallas, Texas.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

MOTORS, Alternating Current

Roth Brothers & Co., 1400 W. Adams St., Chicago, Ill.

MOTORS, Direct Current

Rochester Electric Products Corp., 640 Driving Park Ave., Rochester, N. Y.
Roth Bros. & Co., 1400 W. Adams St., Chicago, Ill
B. A. Wesche Electric Co., 1628 Vine St., Cincinnati, Ohio.

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Houston Armature Works, Houston, Texas
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Langstadt-Meyer Co., Appleton, Wis.
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National Supply Co., Toledo, Ohio
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B. A. Wesche Electric Co., 1628 Vine St., Cincinnati, Ohio.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

MOTORS, Polishing
Roth Bros. & Co., 1400 W. Adams St., Chicago, Ill

MOTORS, Single Phase
Brazelton, Wessendorff & Nelms Houston, Texas
Briggs Weaver Machinery Co., Dallas, Texas
Century Electric Co., 1806 Pine St., St. Louis Mo.
Continental Supply Co., St. Louis, Missouri
Fairbanks, Morse & Co., 900 S. Wabash Ave., Chicago, Ill.
Fidelity Electric Co., 331 No. Arch St., Lancaster, Pa.
F. W. Gartner Co., Houston, Texas.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Houston Armature Works, Houston, Texas
Indiana Air Pump Co., 816 Indiana Pythian Bldg., Indianapolis, Indiana
Langstadt-Meyer Co., Appleton, Wis.
Maintenance Co., Inc., 449-53 W Forty-Second St., N. Y., N. Y
Master Electric Company, First & Sears Sts., Dayton, Ohio.
The Randle Machinery Co., 1723 Power St., Cincinnati, Ohio
Southern Engine & Pump Co., Houston, Texas
B. A. Wesche Electric Co., 1628 Vine St., Cincinnati, Ohio.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.

MOTORS, Split Phase
Brazelton, Wessendorff & Nelms Houston, Texas
Briggs Weaver Machinery Co., Dallas, Texas
Century Electric Co., 1806 Pine St., St. Louis Mo.
Continental Supply Co., St. Louis, Missouri
Fidelity Electric Co., 331 No. Arch St., Lancaster, Pa.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Houston Armature Works, Houston, Texas
Langstadt-Meyer Co., Appleton, Wis.
Maintenance Co., Inc., 449-53 W. Forty-Second St., N. Y., N. Y.
National Supply Co., Toledo, Ohio
The Randle Machinery Co., 1723 Power St., Cincinnati, Ohio
Southern Engine & Pump Co., Houston, Texas
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

MOTORS, Synchronous
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Briggs Weaver Machinery Co., Dallas, Texas
Crocker-Wheeler Electric Mfg. Co., Ampere, N. J.
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Electric Machinery Mfg. Co., 14th & Tyler Sts., N. E. Minneapolis, Minn.
Fairbanks, Morse & Co., 900 S. Wabash Ave., Chicago, Ill.
Fidelity Electric Co., 331 No. Arch St., Lancaster, Pa.
Houston Armature Works, Houston, Texas
Langstadt-Meyer Co., Appleton, Wis.
Maintenance Co., Inc., 449-53 W. Forty-Second St., N. Y., N. Y.
National Supply Co., Toledo, Ohio
The Randle Machinery Co., 1723 Power St., Cincinnati, Ohio
Ridgway, Dynamo & Engine Co., Ridgway, Pa.
Southern Engine & Pump Co., Houston, Texas
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

N

NOZZLES, Rubber Spray
La Favorite Rubber Mfg. Co., Wagaraw Rd., Hawthorne, N. J.

NOZZLES, Spray
The Alexander Milburn Co., 1416 W. Baltimore St., Baltimore, Md.
Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
Bayley Mfg. Co., 73 Greenbush St., Milwaukee, Wis.
Binks Spray Equipment Co., 3114 Carroll Ave., Chicago, Ill.
Briggs Weaver Machinery Co., Dallas, Texas
Chicago Pneumatic Tool Co., 6 E. 44th St., New York, N. Y.
Continental Supply Co., St. Louis, Missouri
MacLeod Company, Cincinnati, Ohio
Malleable Iron Fittings Co., Banford, Conn.
National Supply Co., Toledo, Ohio
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Peden Iron & Steel Co., Houston, Texas. See page 85.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Schutte & Koerting Co., 1165 Thompson St., Philadelphia, Pa. See page 149.
John Simmons Co., 104-10 Center St., New York, N. Y.
Tennant Co., Union National Bank Bldg., Houston, Texas
Walworth Company, 88 Pearl St., Boston, Mass.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

NOZZLES, Tank Shell
Oil Conservation Engineering Co., Cleveland, Ohio. See page 4.

P

PACKING
General Asbestos & Rubber Co., Charleston, S. C.
Geo. W. Knowlton Rubber Co., 60 Pearl St., Boston, Mass.

PACKING, Absorber
Dean E. Foster, New Wright Bldg., Tulsa, Okla.

PACKING, Ammonia
Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
American Engineering Co., Philadelphia, Pa.
Anchor Packing Co., Lafayette Bldg., Philadelphia, Pa.
Arctic Ice Machine Co., Canton, Ohio
Armstrong Machinery Co., 3201-19 E. Riverside, Spokane, Wash.
Austin-Mason Co., 15 Park Row, New York, N. Y.
R. V. Aycock Co., Kansas City, Mo.
Baker Ice Machine Co., 3601 Evans St., Omaha, Nebr.
Randolph Brandt, 66 Cortlandt St., New York, N. Y.
Briggs Weaver Machinery Co., Dallas, Texas
Stewart R. Browne Mfg. Co., New York, N. Y.
Cancos Mfg. Co., Bridge & Garden Sts., Bridesburg, Philadelphia, Pa.
Carbondale Machine Co., Carbondale, Pa.
Cincinnati Gasket & Packing Co., 1546-48 Elm St., Cincinnati, Ohio
Collins Metallic Packing Co., 56-58 No. Second St., Philadelphia, Pa.
Crandall Packing Co., Palmyra, New York
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Diamond Rubber Co., Inc., Akron, Ohio.
Edison Packing & Sales Co., 234 State St., Boston, Mass.
Eureka Packing Co., 78-80 Murray St., New York, N. Y.
Garlock Packing Co., 50 Main St., Palmyra, N. Y. See page 67.
Goetze Gasket & Packing Co., New Brunswick, N. J. See page 145.
Greene Brothers, Wichita Falls, Texas. See page 61.
Hydraulic Press Mfg. Co., Mt. Gilead, Ohio.
Janos Asbestos Co., 26 Cortlandt St., New York, N. Y.
Jenkins Bros., 80 White St., New York, N. Y.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Geo. W. Knowlton Rubber Co., 60 Pearl St., Boston, Mass.
La Favorite Rubber Mfg. Co., Wagaraw Rd., Hawthorne, N. J.
The Manhattan Rubber Mfg. Co., Passaic, N. J.
Metallo Gasket Co., New Brunswick, N. J. See page 158.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
New York Belting & Packing Co., 91-93 Chamber St., New York, N. Y.
Jas. L. Robertson & Son, 79-80 Murray St., New York, N. Y.
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
Texas Belting Co., Houston, Texas.
U. S. Indestructible Gasket Co., 829 E. 15th St., Brooklyn, N. Y.
Thos. C. Warley & Co., 211-217 Bainbridge St., Philadelphia, Pa.
Witherup Cork Packing Co., Beaumont, Texas.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.
York Manufacturing Co., York, Pa. See page 143.

PACKING, Asbestos
Johns-Manville Inc., 292 Madison Ave., New York, N. Y.
Keasbey & Mattison Co., Ambler, Pa.

PACKING, Sheet Asbestos
Rogers Asbestos Co., Houston, Texas

PACKING, Cork
Anchor Packing Co., Lafayette Bldg., Philadelphia, Pa.
Armstrong Cork & Insulation Co., Pittsburgh, Pa.
Austin-Mason Co., 15 Park Row, New York, N. Y.
R. V. Aycock Co., Kansas City, Mo.
Stewart R. Browne Mfg. Co., New York, N. Y.
Cincinnati Gasket & Packing Co., 1546-48 Elm St., Cincinnati, Ohio
Continental Supply Co., St. Louis, Missouri
Goetze Gasket & Packing Co., New Brunswick, N. J. See page 145.
Greene Brothers, Wichita Falls, Texas. See page 61.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
Witherup Cork Packing Co., Beaumont, Texas.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

PACKING, Felt
Anchor Packing Co., Lafayette Bldg., Philadelphia, Pa.
Austin-Mason Co., 15 Park Row, New York, N. Y.
R. V. Aycock Co., Kansas City, Mo.
Booth Felt Co., Inc., 463-473 Nineteenth St., Brooklyn, N. Y.
Briggs Weaver Machinery Co., Dallas, Texas
Cincinnati Gasket & Packing Co., 1546-48 Elm St., Cincinnati, Ohio
Continental Supply Co., St. Louis, Missouri
Garlock Packing Co., 50 Main St., Palmyra, N. J. See page 67.
Greene Brothers, Wichita Falls, Texas. See page 61.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Rogers Asbestos Co., Houston, Texas.
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
Union Fibre Co., Winona, Minn.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

PACKING, Fibrous
Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
Anchor Packing Co., Lafayette Bldg., Philadelphia, Pa.
Austin-Mason Co., 15 Park Row, New York, N. Y.
R. V. Aycock Co., Kansas City, Mo.
Randolph Brandt, 66 Cortlandt St., New York, N. Y.
Briggs Weaver Machinery Co., Dallas, Texas
Stewart R. Browne Mfg. Co., New York, N. Y.
Cancos Mfg. Co., Bridge & Garden Sts., Bridesburg, Philadelphia, Pa.
Cincinnati Gasket & Packing Co., 1546-48 Elm St., Cincinnati, Ohio
Continental Supply Co., St. Louis, Missouri
Crandall Packing Co., Palmyra, New York
The Darcold Co., 55 Warren St., New York, N. Y.
Diamond Rubber Co., Inc., Akron, Ohio.
Edison Packing & Sales Co., 234 State St., Boston, Mass.
Eureka Packing Co., 78-80 Murray St., New York, N. Y.
Garlock Packing Co., 50 Main St., Palmyra, N. Y. See page 67.
Goetze Gasket & Packing Co., New Brunswick, N. J. See page 145.
Greene Brothers, Wichita Falls, Texas. See page 61.
Janos Asbestos Co., 26 Cortlandt St., New York, N. Y.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Geo. W. Knowlton Rubber Co., 60 Pearl St., Boston, Mass.
Metallo Gasket Co., New Brunswick, N. J. See page 158.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
New York Belting & Packing Co., 91-93 Chamber St., New York, N. Y.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Jas. L. Robertson & Son, 79-80 Murray St., New York, N. Y.
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
Texas Belting Co., Houston, Texas.
Union Fibre Co., Winona, Minn.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

PACKING, Flax
Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
Anchor Packing Co., Lafayette Bldg., Philadelphia, Pa.
Austin-Mason Co., 15 Park Row, New York, N. Y.
R. V. Aycock Co., Kansas City, Mo.
Briggs Weaver Machinery Co., Dallas, Texas
Cancos Mfg. Co., Bridge & Garden Sts., Bridesburg, Philadelphia, Pa.
Cincinnati Gasket & Packing Co., 1546-48 Elm St., Cincinnati, Ohio

Continental Supply Co., St. Louis, Missouri
Crandall Packing Co., Palmyra, New York
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Edison Packing & Sales Co., 234 State St., Boston, Mass.
Eureka Packing Co., 78-80 Murray St., New York, N. Y.
Garlock Packing Co., 50 Main St., Palmyra, N. Y. See page 67.
Goetze Gasket & Packing Co., New Brunswick, N. J. See page 145.
Greene Brothers, Wichita Falls, Texas. See page 61.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Hydraulic Press Mfg. Co., Mt. Gilead, Ohio.
Janos Asbestos Co., 26 Cortlandt St., New York, N. Y.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Geo. W. Knowlton Rubber Co., 60 Pearl St., Boston, Mass.
La Favorite Rubber Mfg. Co., Wagaraw Rd., Hawthorne, N. J.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
New York Belting & Packing Co., 91-93 Chamber St., New York, N. Y.
Oil Well Supply Co., Pittsburgh, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
Texas Belting Co., Houston, Texas.
Union Fibre Co., Winona, Minn.
Walworth Company, 88 Pearl St., Boston, Mass.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

PACKING, Gasoline

Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
Anchor Packing Co., Lafayette Bldg., Philadelphia, Pa.
Austin-Mason Co., 15 Park Row, New York, N. Y.
R. V. Aycock Co., Kansas City, Mo.
Randolph Brandt, 66 Cortlandt St., New York, N. Y.
Briggs Weaver Machinery Co., Dallas, Texas
Cancos Mfg. Co., Bridge & Garden Sts., Bridesburg, Philadelphia, Pa.
Chicago Belting Co., 125 N. Green, Chicago, Ill.
Cincinnati Gasket & Packing Co., 1546-48 Elm St., Cincinnati, Ohio
Continental Supply Co., St. Louis, Missouri
Crandall Packing Co., Palmyra, New York
Diamond Rubber Co., Inc., Akron, Ohio.
Edison Packing & Sales Co., 234 State St., Boston, Mass.
Garlock Packing Co., 50 Main St., Palmyra, N. Y. See page 67.
Goetze Gasket & Packing Co., New Brunswick, N. J. See page 145.
Greene Brothers, Wichita Falls, Texas. See page 61.
Janos Asbestos Co., 26 Cortlandt St., New York, N. Y.
Jenkins Bros., 80 White St., New York, N. Y.
Geo. W. Knowlton Rubber Co., 60 Pearl St., Boston, Mass.
La Favorite Rubber Mfg. Co., Wagaraw Rd., Hawthorne, N. J.
Metallo Gasket Co., New Brunswick, N. J. See page 158.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
New York Belting & Packing Co., 91-93 Chamber St., New York, N. Y.
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
Texas Belting Co., Houston, Texas.
U. S. Indestructible Gasket Co., 829 E. 15th St., Brooklyn, N. Y.
Witherup Cork Packing Co., Beaumont, Texas.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

PACKING, Gasoline Pump

Keasbey & Mattison Co., Ambler, Pa.

PACKING, High Pressure

Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
Anchor Packing Co., Lafayette Bldg., Philadelphia, Pa.
Austin-Mason Co., 15 Park Row, New York, N. Y.
R. V. Aycock Co., Kansas City, Mo.
Randolph Brandt, 56 Cortlandt St., New York, N. Y.
Briggs Weaver Machinery Co., Dallas, Texas
Cancos Mfg. Co., Bridge & Garden Sts., Bridesburg, Philadelphia, Pa.
Chicago Belting Co., 125 N. Green, Chicago, Ill.
Cincinnati Gasket & Packing Co., 1546-48 Elm St., Cincinnati, Ohio
Continental Supply Co., St. Louis, Missouri
Crandall Packing Co., Palmyra, New York
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
The Dardo'd Co., 55 Warren St., New York, N. Y.
Diamond Rubber Co., Inc., Akron, Ohio.
Edison Packing & Sales Co., 234 State St., Boston, Mass.
Eureka Packing Co., 78-80 Murray St., New York, N. Y.
Garlock Packing Co., 50 Main St., Palmyra, N. Y. See page 67.
Goetze Gasket & Packing Co., New Brunswick, N. J. See page 145.
Greene Brothers, Wichita Falls, Texas. See page 61.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Hydraulic Press Mfg. Co., Mt. Gilead, Ohio.
Janos Asbestos Co., 26 Cortlandt St., New York, N. Y.
Jenkins Bros., 80 White St., New York, N. Y.
Geo. W. Knowlton Rubber Co., 60 Pearl St., Boston, Mass.
La Favorite Rubber Mfg. Co., Wagaraw Rd., Hawthorne, N. J.
The Manhattan Rubber Mfg. Co., Passaic, N. J.
Metallo Gasket Co., New Brunswick, N. J. See page 158.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Valve & Mfg. Co., 31st and Liberty, Pittsburgh, Pa.
New York Belting & Packing Co., 91-93 Chamber St., New York, N. Y.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Pitts & Kitts Mfg. & Supply Co., 91 7th Ave., New York, N. Y.
Jas. L. Robertson & Son, 79-80 Murray St., New York, N. Y.
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
Texas Belting Co., Houston, Texas.
U. S. Indestructible Gasket Co., 829 E. 15th St., Brooklyn, N. Y.
Walworth Company, 88 Pearl St. Boston, Mass.
Witherup Cork Packing Co., Beaumont, Texas.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.

PACKING, Hydraulic

Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
Anchor Packing Co., Lafayette Bldg., Philadelphia, Pa.
Austin-Mason Co., 15 Park Row, New York, N. Y.
R. V. Aycock Co., Kansas City, Mo.
Briggs Weaver Machinery Co., Dallas, Texas
The Burroughs Co., 246 N. Tenth St., Newark, N. J.
Cancos Mfg. Co., Bridge & Garden Sts., Bridesburg, Philadelphia, Pa.
Chicago Belting Co., 125 N. Green, Chicago, Ill.
Chicago Rawhide Mfg. Co., 1273 Elston Ave., Chicago, Ill.
Cincinnati Gasket & Packing Co., 1546-48 Elm St., Cincinnati, Ohio
Continental Supply Co., St. Louis, Missouri
Crandall Packing Co., Palmyra, New York
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
The Dardo'd Co., 55 Warren St., New York, N. Y.
Diamond Rubber Co., Inc., Akron, Ohio.
Richard Dudgeon, Inc., New York, N. Y.
Edison Packing & Sales Co., 234 State St., Boston, Mass.
Eureka Packing Co., 78-80 Murray St., New York, N. Y.
Excelsior Valve Co., 106-108 Fulton St., New York, N. Y.
Garlock Packing Co., 50 Main St., Palmyra, N. Y. See page 67.
Goetze Gasket & Packing Co., New Brunswick, N. J. See page 145.
Greene Brothers, Wichita Falls, Texas. See page 61.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Hydraulic Press Mfg. Co., Mt. Gilead, Ohio.
Janos Asbestos Co., 26 Cortlandt St., New York, N. Y.
Jenkins Bros., 80 White St., New York, N. Y.
Judd & Leland Mfg. Co., Clifton Springs, N. Y.
Geo. W. Knowlton Rubber Co., 60 Pearl St., Boston, Mass.
La Favorite Rubber Mfg. Co., Wagaraw Rd., Hawthorne, N. J.
Mabbs Hydaulic Packing Co., 431 S. Dearborn St., Chicago, Ill.
The Manhattan Rubber Mfg. Co., Passaic, N. J.
Metallo Gasket Co., New Brunswick, N. J. See page 158.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
New York Belting & Packing Co., 91-93 Chamber St., New York, N. Y.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Jas. L. Robertson & Son, 79-80 Murray St., New York, N. Y.
Chas. A. Schieren Co., 77 Ferry St. New York, N. Y.
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
Texas Belting Co., Houston, Texas.
U. S. Indestructible Gasket Co., 829 E. 15th St., Brooklyn, N. Y.
Walworth Company, 88 Pearl St., Boston, Mass.
Thos. C. Warley & Co., 211-217 Bainbridge St., Philadelphia, Pa.
Western Rawhide & Belting Co., 901-35 Winnebago St., Milwaukee, Wis.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

PACKING, Leather

Anchor Packing Co., Lafayette Bldg., Philadelphia, Pa.
Austin-Mason Co., 15 Park Row, New York, N. Y.
R. V. Aycock Co., Kansas City, Mo.
Briggs Weaver Machinery Co., Dallas, Texas
The Burroughs Co., 246 N. Tenth St., Newark, N. J.
Chicago Belting Co., 125 N. Green, Chicago, Ill.
Chicago Rawhide Mfg. Co., 1273 Elston Ave., Chicago, Ill.
Cincinnati Gasket & Packing Co., 1546-48 Elm St., Cincinnati, Ohio
Richard Dudgeon, Inc., New York, N. Y.
Edison Packing & Sales Co., 234 State St., Boston, Mass.
Garlock Packing Co., 50 Main St., Palmyra, N. Y. See page 67.
Goetze Gasket & Packing Co., New Brunswick, N. J. See page 145.
The Graton & Knight Mfg. Co., 356 Franklin St., Worcester, Mass.
Greene Brothers, Wichita Falls, Texas. See page 61.
E. F. Houghton & Co., Philadelphia, Pa.
Hydraulic Press Mfg. Co., Mt. Gilead, Ohio.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Judd & Leland Mfg. Co., Clifton Springs, N. Y.
Mabbs Hydaulic Packing Co., 431 S. Dearborn St., Chicago, Ill.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
The N. Palmer Belting Co., Bridgeport, Conn.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Philadelphia Beliting Co., Sixth & Spring Garden Sts., Philadelphia, Pa.
Chas. A. Schieren Co., 77 Ferry St. New York, N. Y.
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
Texas Belting Co., Houston, Texas
Warren Belting Co., 33 Artic St., Worcester, Mass.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

PACKING, Metallic

Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
Aldrich Pump Co., Foot of Pine St., Allentown, Pa.
Anchor Packing Co., Lafayette Bldg., Philadelphia, Pa.
Austin-Mason Co., 15 Park Row, New York, N. Y.

R. V. Aycock Co., Kansas City, Mo.
Baker Ice Machine Co., 3601 Evans St., Omaha, Nebr.
Briggs Weaver Machinery Co., Dallas, Texas
Cincinnati Gasket & Packing Co., 1546-48 Elm St., Cincinnati, Ohio
Collins Metallic Packing Co., 56-58 No. Second St., Philadelphia, Pa.
Continental Supply Co., St. Louis, Missouri
Crandall Packing Co., Palmyra, New York
Edison Packing & Sales Co., 234 State St., Boston, Mass.
Eureka Packing Co., 78-80 Murray St., New York, N. Y.
Garlock Packing Co., 50 Main St., Palmyra, N. Y. See page 67.
Goetze Gasket & Packing Co., New Brunswick, N. J. See page 145.
Greene Brothers, Wichita Falls, Texas. See page 61.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Geo. W. Knowlton Rubber Co., 60 Pearl St., Boston, Mass.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
Oil Well Supply Co., Pittsburgh, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Plouff Co., 170 Summer St., Boston, Mass.
Jas. L. Robertson & Son, 79-80 Murray St., New York, N. Y.
John Simmons Co., 104-10 Center St., New York, N. Y.
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
Texas Belting Co., Houston, Texas.
U. S. Indestructible Gasket Co., 829 E. 15th St., Brooklyn, N. Y.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

PACKING, Oil

Anchor Packing Co., Lafayette Bldg., Philadelphia, Pa.
Austin-Mason Co., 15 Park Row, New York, N. Y.
R. V. Aycock Co., Kansas City, Mo.
Randolph Brandt, 66 Cortlandt St., New York, N. Y.
Briggs Weaver Machinery Co., Dallas, Texas
Cancos Mfg. Co., Bridge & Garden Sts., Bridesburg, Philadelphia, Pa.
Cincinnati Gasket & Packing Co., 1546-48 Elm St., Cincinnati, Ohio
Continental Supply Co., St. Louis, Missouri
Crandall Packing Co., Palmyra, New York
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Diamond Rubber Co., Inc., Akron, Ohio.
Edison Packing & Sales Co., 234 State St., Boston, Mass.
Eureka Packing Co., 78-80 Murray St., New York, N. Y.
Garlock Packing Co., 50 Main St., Palmyra, N. Y. See page 67.
Goetze Gasket & Packing Co., New Brunswick, N. J.
Greene Brothers, Wichita Falls, Texas. See page 61.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Geo. W. Knowlton Rubber Co., 60 Pearl St., Boston, Mass.
La Favorite Rubber Mfg. Co., Wagaraw Rd., Hawthorne, N. J.
Mabbs Hydaulic Packing Co., 431 S. Dearborn St., Chicago, Ill.
Metallo Gasket Co., New Brunswick, N. J. See page 158.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
New York Belting & Packing Co., 91-93 Chamber St., New York, N. Y.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Jas. L. Robertson & Son, 79-80 Murray St., New York, N. Y.
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
Texas Belting Co., Houston, Texas.
U. S. Indestructible Gasket Co., 829 E. 15th St., Brooklyn, N. Y.
Witherup Cork Packing Co., Beaumont, Texas.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

PACKING, Oil Pump

U. S. Indestructible Gasket Co., 829 E. 15th St., Brooklyn, N. Y.

PACKING, Paper

Anchor Packing Co., Lafayette Bldg., Philadelphia, Pa.
R. V. Aycock Co., Kansas City, Mo.
Randolph Brandt, 66 Cortlandt St., New York, N. Y.
Briggs Weaver Machinery Co., Dallas, Texas
Continental Supply Co., St. Louis, Missouri
Garlock Packing Co., 50 Main St., Palmyra, N. Y. See page 67.
Greene Brothers, Wichita Falls, Texas. See page 61.
Janos Asbestos Co., 26 Cortlandt St., New York, N. Y.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
Jas. L. Robertson & Son, 79-80 Murray St., New York, N. Y.
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
Texas Belting Co., Houston, Texas.
U. S. Indestructible Gasket Co., 829 E. 15th St., Brooklyn, N. Y.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

PACKING, Piston

Anchor Packing Co., Lafayette Bldg., Philadelphia, Pa.
Austin-Mason Co., 15 Park Row, New York, N. Y.
R. V. Aycock Co., Kansas City, Mo.
Randolph Brandt, 66 Cortlandt St., New York, N. Y.
Briggs Weaver Machinery Co., Dallas, Texas
Cancos Mfg. Co., Bridge & Garden Sts., Bridesburg, Philadelphia, Pa.
Cincinnati Gasket & Packing Co., 1546-48 Elm St., Cincinnati, Ohio
Continental Supply Co., St. Louis, Missouri
Crandall Packing Co., Palmyra, New York
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 150.
Diamond Rubber Co., Inc., Akron, Ohio.
Edison Packing & Sales Co., 234 State St., Boston, Mass.
Eureka Packing Co., 78-80 Murray St., New York, N. Y.
Garlock Packing Co., 50 Main St., Palmyra, N. Y. See page 67.
Goetze Gasket & Packing Co., New Brunswick, N. J. See page 145.
Greene Brothers, Wichita Falls, Texas. See page 61.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Janos Asbestos Co., 26 Cortlandt St., New York, N. Y.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Geo. W. Knowlton Rubber Co., 60 Pearl St., Boston, Mass.
La Favorite Rubber Mfg. Co., Wagaraw Rd., Hawthorne, N. J.
Mission Sales Co., 827 First Nat. Bank Bldg., Houston, Texas.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
New York Belting & Packing Co., 91-93 Chamber St., New York, N. Y.
Oil Well Supply Co., Pittsburgh, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Pioneer Rubber Mills, 353 Sacramento St., San Francisco, Calif.
Jas. L. Robertson & Son, 79-80 Murray St., New York, N. Y.
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
Texas Belting Co., Houston, Texas.
Union Iron Works, Selma, Ala.
Walworth Company, 88 Pearl St., Boston, Mass.
Witherup Cork Packing Co., Beaumont, Texas.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

PACKING, Pump Rings

Keasbey & Mattison Co., Ambler, Pa.

PACKING Rawhide

Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
Anchor Packing Co., Lafayette Bldg., Philadelphia, Pa.
R. V. Aycock Co., Kansas City, Mo.
Briggs Weaver Machinery Co., Dallas, Texas
Chicago Belting Co., 125 N. Green, Chicago, Ill.
Chicago Rawhide Mfg. Co., 1273 Elston Ave., Chicago, Ill.
Cincinnati Gasket & Packing Co., 1546-48 Elm St., Cincinnati, Ohio
Continental Supply Co., St. Louis, Missouri.
Edison Packing & Sales Co., 234 State St., Boston, Mass.
Garlock Packing Co., 50 Main St., Palmyra, N. Y. See page 67.
Goetze Gasket & Packing Co., New Brunswick, N. J. See page 145.
Greene Brothers, Wichita Falls, Texas. See page 61.
Hydraulic Press Mfg. Co., Mt. Gilead, Ohio.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Mabbs Hydaulic Packing Co., 431 S. Dearborn St., Chicago, Ill.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
Texas Belting Co., Houston, Texas.
U. S. Indestructible Gasket Co., 829 E. 15th St., Brooklyn, N. Y.
Western Rawhide & Belting Co., 901-35 Winnebago St., Milwaukee, Wis.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

PACKING, Rope and Wick

Philip Carey Co., Cincinnati, Ohio

PACKING Rubber

Anchor Packing Co., Lafayette Bldg., Philadelphia, Pa.
Austin-Mason Co., 15 Park Row, New York, N. Y.
R. V. Aycock Co., Kansas City, Mo.
Black, Sivalls & Bryson, Bartlesville, Okla.
Briggs Weaver Machinery Co., Dallas, Texas
Cancos Mfg. Co., Bridge & Garden Sts., Bridesburg, Philadelphia, Pa.
Cincinnati Gasket & Packing Co., 1546-48 Elm St., Cincinnati, Ohio
Continental Supply Co., St. Louis, Missouri
Crandall Packing Co., Palmyra, New York
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Diamond Rubber Co., Inc., Akron, Ohio.
Edison Packing & Sales Co., 234 State St., Boston, Mass.
Eureka Packing Co., 78-80 Murray St., New York, N. Y.
Garlock Packing Co., 50 Main St., Palmyra, N. Y.
Goetze Gasket & Packing Co., New Brunswick, N. J.
B. F. Goodrich Rubber Co., Akron, Ohio
Greene Brothers, Wichita Falls, Texas. See page 61.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Janos Asbestos Co., 26 Cortlandt St., New York, N. Y.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Geo. W. Knowlton Rubber Co., 60 Pearl St., Boston, Mass.
La Favorite Rubber Mfg. Co., Wagaraw Rd., Hawthorne, N. J.
The Manhattan Rubber Mfg. Co., Passaic, N. J.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
New York Belting & Packing Co., 91-93 Chamber St., New York, N. Y.
Oil Well Supply Co., Pittsburgh, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Petroleum Supply Co., Houston, Texas
Pioneer Rubber Mills, 353 Sacramento St., San Francisco, Calif.
Republic Rubber Co., Youngstown, Ohio
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
John Simmons Co., 104-10 Center St., New York, N. Y.
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
Texas Belting Co., Houston, Texas.
Voorhees Rubber Mfg. Co., 20 Bostwick Ave., Jersey City, N.J.
Walworth Company, 88 Pearl St., Boston, Mass.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

PACKING, Sheet

Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
Anchor Packing Co., Lafayette Bldg., Philadelphia, Pa.
Austin-Mason Co., 15 Park Row, New York, N. Y.
R. V. Aycock Co., Kansas City, Mo.
Black, Sivalls & Bryson, Bartlesville, Okla.
Randolph Brandt, 66 Cortlandt St., New York, N. Y.
Briggs Weaver Machinery Co., Dallas, Texas
Cancos Mfg. Co., Bridge & Garden Sts., Bridesburg, Philadelphia, Pa.
Cincinnati Gasket & Packing Co., 1546-48 Elm St., Cincinnati, Ohio
Continental Supply Co., St. Louis, Missouri
Crandall Packing Co., Palmyra, New York
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
The Darcoid Co., 55 Warren St., New York, N. Y.
Diamond Rubber Co., Inc., Akron, Ohio.
Edison Packing & Sales Co., 234 State St., Boston, Mass.
Eureka Packing Co., 78-80 Murray St., New York, N. Y.
Garlock Packing Co., 50 Main St., Palmyra, N. Y. See page 67.
Goetze Gasket & Packing Co., New Brunswick, N. J. See page 145.
B. F. Goodrich Rubber Co., Akron, Ohio
Greene Brothers, Wichita Falls, Texas. See page 61.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Janos Asbestos Co., 26 Cortlandt St., New York, N. Y.
Jenkins Bros., 80 White St., New York, N. Y.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Geo. W. Knowlton Rubber Co., 60 Pearl St., Boston, Mass.
La Favorite Rubber Mfg. Co., Wagaraw Rd., Hawthorne, N. J.
The Manhattan Rubber Mfg. Co., Passaic, N. J.
Metallo Gasket Co., New Brunswick, N. J. See page 158.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
New York Belting & Packing Co., 91-93 Chamber St., New York, N. Y.
Oil Well Supply Co., Pittsburgh, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Pioneer Rubber Mills, 353 Sacramento St., San Francisco, Calif.
Pitts & Kitts Mfg. & Supply Co., 91 7th Ave., New York, N. Y.
Republic Rubber Co., Youngstown, Ohio
Jas. L. Robertson & Son, 79-80 Murray St., New York, N. Y.
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
John Simmons Co., 104-10 Center St., New York, N. Y.
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
Texas Belting Co., Houston, Texas.
Union Iron Works, Selma, Ala.
U. S. Indestructible Gasket Co., 829 E. 15th St., Brooklyn, N. Y.
Walworth Company, 88 Pearl St., Boston, Mass.
Thos. C. Warley & Co., 211-17 Bainbridge St., Philadelphia, Pa.
Witherup Cork Packing Co., Beaumont, Texas.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

PACKING, Valve

Keasbey & Mattison Co., Ambler, Pa.

PACKING, Asbestos Braided Valve

Keasbey & Mattison Co., Ambler, Pa.

PACKING, Asbestos Split Rings Valve

Keasbey & Mattison Co., Ambler, Pa.

PACKING, Asbestos Twisted Valve

Keasbey & Mattison Co., Ambler, Pa.

PACKING, Valve Steam

Garlock Packing Co., 50 Main St., Palmyra, N. Y. See page 67.

PAINTS

Acmo Color & White Lead Co., 8250 St. Aubin, Detroit, Mich.
American Paint & Supply Co., Dallas, Texas
Arco Co., Cleveland, Ohio
Arlington Paint & Varnish Co., 1329 Harrison Ave., S. W. Canton, Ohio
Briggs Weaver Machinery Co., Dallas, Texas
Columbian Steel Tank Co., 1401-1631 W. Twelfth St., Kansas City, Mo.
Continental Products Co., Euclid, Ohio
Continental Supply Co., St. Louis, Missouri
Cook Paint & Varnish Co., North Kansas City, Mo. See page 7.
The Dampney Co. of America, 50-60 Business St., Boston, Mass.
Detroit Graphite Co. of Texas, 1506 Second Nat. Bnk. Bldg., Houston, Texas. See page 11.
Greene Brothers, Wichita Falls, Texas. See page 61.
Hill, Hubbell & Co., 115 Davis St., San Francisco, Calif.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Kuhn Paint & Varnish Works, Houston, Texas.
Lowe Bros. Co., Dayton, Ohio.
John Lucas Co., Philadelphia, Pa.
Marine Paint & Varnish Co., Inc., New Orleans, La.
McDougall-Butler Co., Inc., Evans, Water and Norton Sts., Buffalo, New York.
Paraffine Cos. Inc., San Francisco, Calif.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Perolin Co. of America, 1112 W. 37th St., Chicago, Illinois
Quigley Furnace Specialties Co., 25 Church St., New York, N. Y.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
The Sherwin-Williams Co., 601 Canal Road, Cleveland, Ohio.
Truscon Laboratories, Carriff & G. T. R.R., Detroit, Mich.
Vane-Calvert Paint Co., St. Louis, Mo.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

PAINT, Acidproofing

Truscon Laboratories, Carriff & G. T. R.R., Detroit, Mich.

PAINTS, Acid Resisting

American Paint & Supply Co., Dallas, Texas
Arco Co., Cleveland, Ohio
Arlington Paint & Varnish Co., 1329 Harrison Ave., S. W. Canton, Ohio
The Barber Asphalt Co., 1600 Arch St., Philadelphia, Pa.
Columbian Steel Tank Co., 1401-1631 W. Twelfth St., Kansas City, Mo.
Continental Products Co., Euclid, Ohio
Cook Paint & Varnish Co., North Kansas City, Mo. See page 7.
The Dampney Co. of America, 50-60 Business St., Boston, Mass.
Detroit Graphite Co. of Texas, 1506 Second Nat. Bank Bldg., Houston, Texas. See page 11.
E. I. DuPont de Nemours & Co., 2100 Elston Ave., Chicago, Ill.
The Eclipse Paint & Mfg. Co., Cleveland, Ohio.
Greene Brothers, Wichita Falls, Texas. See page 61.
Hill, Hubbell & Co., 115 Davis St., San Francisco, Calif.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Lowe Bros. Co., Dayton, Ohio.
John Lucas Co., Philadelphia, Pa.
Marine Paint & Varnish Co., Inc., New Orleans, La.
Paraffine Cos. Inc., San Francisco, Calif.
Perolin Co. of America, 1112 W. 37th St., Chicago, Illinois
Preservative Paint Co., Seattle, Wash.
Pro-Tar Products Co., 305 Delaware St., Kansas City, Mo.
Quigley Furnace Specialties Co., 25 Church St., New York, N. Y.

To Avoid Off-Color Products—To Eliminate Rerunning—To Speed Up Throughput—To Increase Profits;—

CORRECTLY DESIGNED TOWER EQUIPMENT IS ESSENTIAL

SOUTHWESTERN BUBBLE TYPE (PATENTED) EVAPORATORS FRACTIONATORS ABSORBERS

ALL SOUTHWESTERN Towers, including Fractionators, Evaporators and Absorbers are sold with a positive guarantee of performance. . . . Flexibility is insured by liberal overflows to carry double the normal amount of reflux. . . . Correct engineering and scientific design have reduced size and weight to the minimum. . . . From the standpoint of guaranteed results over a period of years, SOUTHWESTERN Equipment is always the most economical.

The Most Important Points to Be Considered in Choosing a Tower Are These;—

1—PERFORMANCE
2—FLEXIBILITY
3—SIZE AND WEIGHT
4—COST

Incidentally, the design of the towers supplied with the SOUTHWESTERN Portable Gasoline Absorption Plant accounts for the fact that the evaporator will CONSISTENTLY strip the rich oil to less than ½ of 1% saturation with minimum steam consumption;—that the fractionator will accurately control the end point, CONSISTENTLY producing a gasoline of uniform quality and color;—and that the absorbers will CONSISTENTLY deliver a tail gas of less than .05 gal. per 1000 cu. ft. (charcoal test).

SOUTHWESTERN ENGINEERING COMPANY INC.
Designers Consultants Mfgrs.

90 West Street, New York Factories: Olean, N. Y., Los Angeles, Cal.

—if you build your own bubble towers why not build your own automobile?

The Industry is fast turning to the Bubble Tower as the most efficient commercial fractionating device yet developed.

Properly designed it brings greatly increased profits; produces the ultimate in yields; eliminates all wasteful rerunning; saves considerable fuel, and makes the operation much easier. Have you ever stopped to think what this would mean to your balance sheet?

Building bubble towers is one thing—but getting maximum results from this equipment is another problem again. The correct construction of bubble towers requires specialized engineering knowledge and experience.

There must be an excellent reason why we have been called in by leading refiners located in various parts of the country, not only to prepare original designs for such equipment—BUT TO REDESIGN FAULTY EQUIPMENT ALREADY INSTALLED.

Our decks are made of cast iron, for longer life and greater efficiency; cheap sheet steel decks corrode and have been found universally unsatisfactory.

We solicit an opportunity to show what our equipment will do in your plant.

WINKLER & KOCH

CONSULTING AND CONSTRUCTION ENGINEERS

429 First National Bank Bldg. Wichita, Kansas

Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
Rogers Asbestos Co., Houston, Texas.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
The Sherwin-Williams Co., 601 Canal Road, Cleveland, Ohio.
St. Louis Surfacer & Paint Co., 5506 Hazel Ave., St. Louis, Mo.
Tnemec Paint & Oil Co., 3122 Roanoke Road, Kansas City, Mo.
Truscon Laboratories, Carriff & G. T. R.R., Detroit, Mich.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

PAINT, Aluminum

Continental Products Co., Euclid Ohio
Detroit Graphite Co. of Texas, 1506 Second Nat. Bank Bldg., Houston, Texas. See page 7.
Lowe Bros. Co., Dayton, Ohio.
McDougall-Butler Co., Inc., Evans, Water and Norton Sts., Buffalo, New York.

PAINT, Black Hot Surface

Tnemec Paint & Oil Co., 3122 Roanoke Road, Kansas City, Mo.

PAINT, Boiler Wall

Detroit Graphite Co. of Texas, 1506 Second Nat. Bank Bldg., Houston, Texas. See page 7.

PAINTS. Concrete

Acmo Color & White Lead Co., 8250 St. Aubin, Detroit, Mich.
American Paint & Supply Co., Dallas, Texas
Arco Co., Cleveland, Ohio
Arlington Paint & Varnish Co., 1329 Harrison Ave., S. W. Canton, Ohio
The Barber Asphalt Co., 1600 Arch St., Philadelphia, Pa.
Continental Supply Co., St. Louis, Missouri
Cook Paint & Varnish Co., North Kansas City, Mo. See page 7.
Detroit Graphite Co. of Texas, 1506 Second Nat. Bank Bldg., Houston, Texas. See page 11.
E. I. DuPont de Nemours & Co., 2100 Elston Ave., Chicago, Ill.
The Eclipse Paint & Mfg. Co., Cleveland, Ohio.
Greene Brothers, Wichita Falls, Texas. See page 61.
Hill, Hubbell & Co., 115 Davis St., San Francisco, Calif.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Lowe Bros. Co., Dayton, Ohio.
John Lucas Co., Philadelphia, Pa.
Marine Paint & Varnish Co., Inc., New Orleans, La.
McDougall-Butler Co., Inc., Evans, Water and Norton Sts., Buffalo, New York.
Paraffine Cos. Inc., San Francisco, Calif.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Pe olin Co. of America, 1112 W. 37th St., Chicago, Illinois
Preservative Paint Co., Seattle, Wash.
Quigley Furnace Specialties Co., 25 Church St., New York, N. Y.
The Sherwin-Williams Co., 601 Canal Road, Cleveland, Ohio.
St. Louis Surfacer & Paint Co., 5506 Hazel Ave., St. Louis, Mo.
Tnemec Paint & Oil Co., 3122 Roanoke Road, Kansas City, Mo.
Truscon Laboratories, Carriff & G. T. R.R., Detroit, Mich.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

PAINTS, Concrete Waterproofing

Truscon Laboratories, Carriff & G. T. R.R., Detroit, Mich.

PAINTS, Dampproofing

Detroit Graphite Co. of Texas, 1506 Second Nat. Bank Bldg., Houston, Texas. See page 11.
Truscon Laboratories, Carriff & G. T. R.R., Detroit, Mich.

PAINTS Enamel

Acmo Color & White Lead Co., 8250 St. Aubin, Detroit, Mich.
American Paint & Supply Co., Dallas, Texas
Arco Co., Cleveland, Ohio
Arlington Paint & Varnish Co., 1329 Harrison Ave., S. W. Canton, Ohio
Continental Products Co., Euclid, Ohio
Continental Supply Co., St. Louis, Missouri
Cook Paint & Varnish Co., North Kansas City, Mo. See page 7.
Detroit Graphite Co. of Texas, 1506 Second Nat. Bank Bldg., Houston, Texas. See page 11.
E. I. DuPont de Nemours & Co., 2100 Elston Ave., Chicago, Ill.
The Eclipse Paint & Mfg. Co., Cleveland, Ohio.
Greene Brothers, Wichita Falls, Texas. See page 61.
Hill, Hubbell & Co., 115 Davis St., San Francisco, Calif.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Lowe Bros. Co., Dayton, Ohio.
John Lucas Co., Philadelphia, Pa.
Marine Paint & Varnish Co., Inc., New Orleans, La.
McDougall-Butler Co., Inc., Evans, Water and Norton Sts., Buffalo, New York.
Paraffine Cos. Inc., San Francisco, Calif.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Pe olin Co. of America, 1112 W. 37th St., Chicago, Illinois
Preservative Paint Co., Seattle, Wash.
Quigley Furnace Specialties Co., 25 Church St., New York, N. Y.
The Sherwin-Williams Co., 601 Canal Road, Cleveland, Ohio.
St. Louis Surfacer & Paint Co., 5506 Hazel Ave., St. Louis, Mo.
Tnemec Paint & Oil Co., 3122 Roanoke Road, Kansas City, Mo.
Truscon Laboratories, Carriff & G. T. R.R., Detroit, Mich.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

PAINTS, Galvanized Iron

Detroit Graphite Co. of Texas, 1506 Second Nat. Bank Bldg., Houston, Texas. See page 11.

PAINTS, Graphite

Acmo Color & White Lead Co., 8250 St. Aubin, Detroit, Mich.
American Paint & Supply Co., Dallas, Texas
Arco Co., Cleveland, Ohio
Arlington Paint & Varnish Co., 1329 Harrison Ave., S. W. Canton, Ohio
Continental Products Co., Euclid, Ohio
Cook Paint & Varnish Co., North Kansas City, Mo. See page 7.
Detroit Graphite Co. of Texas, 1506 Second Nat. Bank Bldg., Houston, Texas. See page 11.
E. I. DuPont de Nemours & Co., 2100 Elston Ave., Chicago, Ill.
The Eclipse Paint & Mfg. Co., Cleveland, Ohio.
Greene Brothers, Wichita Falls Texas. See page 61.
Maine Boiler Co., St. Louis, Mo.
Hill, Hubbell & Co., 115 Davis St San Francisco, Calif.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Lowe Bros. Co., Dayton, Ohio.
John Lucas Co., Philadelphia, Pa
Marine Paint & Varnish Co., New Orleans, La.
Marine Paint & Varnish Co., Inc., New Orleans, La.
McDougall-Butler Co., Inc., Evans, Water and Norton Sts., Buffalo, New York.
Oil Well Supply Co., Pittsburgh Pa.
Paraffine Cos. Inc., San Francisco. Calif.
Preservative Paint Co., Seattle Wash.
The Sherwin-Williams Co., 601 Canal Road, Cleveland, Ohio.
St. Louis Surfacer & Paint Co., 5506 Hazel Ave., St. Louis, Mo
United States Graphite Co., Saginaw, Mich.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

PAINTS, High Temperature

Detroit Graphite Co. of Texas, 1506 Second Nat. Bank Bldg., Houston, Texas. See page 11.

PAINTS, Machinery

Acmo Color & White Lead Co., 8250 St. Aubin, Detroit, Mich.
Arco Co., Cleveland, Ohio
Arlington Paint & Varnish Co., 1329 Harrison Ave., S. W. Canton, Ohio
Beach-Russ Co., 30 Church St., New York, N. Y.
Binks Spray Equipment Co., 3114 Carroll Ave., Chicago, Ill.
Continental Products Co., Euclid, Ohio
Continental Supply Co., St. Louis, Missouri
Cook Paint & Varnish Co., North Kansas City, Mo. See page 7.
Detroit Graphite Co. of Texas, 1506 Second Nat. Bank Bldg., Houston, Texas. See page 11.
E. I. DuPont de Nemours & Co., 2100 Elston Ave., Chicago, Ill.
The Eclipse Paint & Mfg. Co., Cleveland, Ohio.
Greene Brothers, Wichita Falls, Texas. See page 61.
Hill, Hubbell & Co., 115 Davis St., San Francisco, Calif.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Lowe Bros. Co., Dayton, Ohio.
John Lucas Co., Philadelphia, Pa.
Marine Paint & Varnish Co., Inc., New Orleans, La.
McDougall-Butler Co., Inc., Evans, Water and Norton Sts., Buffalo, New York.
Paraffine Cos. Inc., San Francisco, Calif.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Premier Mill Corporation, Geneva New York.
Preservative Paint Co., Seattle, Wash.
The Sherwin-Williams Co., 601 Canal Road, Cleveland, Ohio.
St. Louis Surfacer & Paint Co., 5506 Hazel Ave., St. Louis, Mo
Truscon Laboratories, Carriff & G. T. R.R., Detroit, Mich.
Union Engineering Co., Cleveland, Ohio.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

PAINTS, Oilproofing

Truscon Laboratories, Carriff & G. T. R.R., Detroit, Mich.

PAINTS, Pipe

Cook Paint & Varnish Co., North Kansas City, Mo. See page 7.

PAINTS, Pipe Line

American Paint & Supply Co. Dallas, Texas
Detroit Graphite Co. of Texas 1506 Second Nat. Bank Bldg., Houston, Texas. See page 11
The Eclipse Paint & Mfg. Co Cleveland, Ohio.
Tnemec Paint & Oil Co., 3122 Roanoke Road, Kansas City, Mo

PAINT, Powder

Aluminum Co. of America, 2400 Oliver Bldg., Pittsburgh, Pa.
American Paint & Supply Co., Dallas, Texas
Arlington Paint & Varnish Co., 1329 Harrison Ave., S. W. Canton, Ohio
Briggs Weaver Machinery Co., Dallas, Texas
Cook Paint & Varnish Co., North Kansas City, Mo. See page 7.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
John Lucas Co., Philadelphia, Pa
Marine Paint & Varnish Co., Inc., New Orleans, La.
The Sherwin-Williams Co., 601 Canal Road, Cleveland, Ohio.
St. Louis Surfacer & Paint Co., 5506 Hazel Ave., St. Louis, Mo
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

PAINTS. Pump

Acmo Color & White Lead Co., 8250 St. Aubin, Detroit, Mich.
Arco Co., Cleveland, Ohio
Arlington Paint & Varnish Co., 1329 Harrison Ave., S. W. Canton, Ohio
Beach-Russ Co., 30 Church St., New York, N. Y.
Briggs Weaver Machinery Co., Dallas, Texas
Continental Products Co., Euclid, Ohio
Continental Supply Co., St. Louis, Missouri
Cook Paint & Varnish Co., North Kansas City, Mo. See page 7.
Detroit Graphite Co. of Texas 1506 Second Nat. Bank Bldg., Houston, Texas. See page 11.
E. I. DuPont de Nemours & Co., 2100 Elston Ave., Chicago, Ill
The Eclipse Paint & Mfg. Co., Cleveland, Ohio.
Greene Brothers, Wichita Falls, Texas. See page 61.
Hill, Hubbell & Co., 115 Davis St., San Francisco, Calif.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Lowe Bros. Co., Dayton, Ohio.
John Lucas Co., Philadelphia, Pa.
Marine Paint & Varnish Co., Inc., New Orleans, La.
Paraffine Cos. Inc., San Francisco, Calif.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Preservative Paint Co., Seattle, Wash.
The Sherwin-Williams Co., 601 Canal Road, Cleveland, Ohio.
St. Louis Surfacer & Paint Co., 5506 Hazel Ave., St. Louis, Mo.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

PAINTS, Red Lead

Acmo Color & White Lead Co., 8250 St. Aubin, Detroit, Mich.
American Paint & Supply Co., Dallas, Texas
Arco Co., Cleveland, Ohio
Arlington Paint & Varnish Co., 1329 Harrison Ave., S. W. Canton, Ohio
Joe Barlow Distributor, Crodus and Taylor, Dallas, Texas
Carter White Lead Co., 12042 Peoria St., Chicago, Ill.
Continental Products Co., Euclid, Ohio
Continental Supply Co., St. Louis, Missouri
Cook Paint & Varnish Co., North Kansas City, Mo. See page 7.
Detroit Graphite Co. of Texas, 1506 Second Nat. Bank Bldg., Houston, Texas. See page 11.
E. I. DuPont de Nemours & Co., 2100 Elston Ave., Chicago, Ill.
Greene Brothers, Wichita Falls, Texas. See page 61.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Lowe Bros. Co., Dayton, Ohio.
John Lucas Co., Philadelphia, Pa.
Marine Paint & Varnish Co., Inc., New Orleans, La.
National Lead Co., 111 Broadway, New York City.
Paraffine Cos. Inc., San Francisco, Calif.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Preservative Paint Co., Seattle, Wash.
The Sherwin-Williams Co., 601 Canal Road, Cleveland, Ohio.
St. Louis Surfacer & Paint Co., 5506 Hazel Ave., St. Louis, Mo.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

PAINTS, Roofing

Cook Paint & Varnish Co., North Kansas City, Mo. See page 7.
Detroit Graphite Co. of Texas. 1506 Second Nat. Bank Bldg., Houston, Texas. See page 11.
The Eclipse Paint & Mfg. Co., Cleveland, Ohio.

PAINTS. Steel

Truscon Laboratories, Carriff & G. T. R.R., Detroit, Mich.

PAINTS, Steel Preservative

American Paint & Supply Co., Dallas, Texas
Arco Co., Cleveland, Ohio
Arlington Paint & Varnish Co., 1329 Harrison Ave., S. W. Canton, Ohio
The Barber Asphalt Co., 1600 Arch St., Philadelphia, Pa.
Columbian Steel Tank Co., 1401-1631 W. Twelfth St., Kansas City, Mo.
Continental Products Co., Euclid, Ohio
Continental Supply Co., St. Louis, Missouri
Cook Paint & Varnish Co., North Kansas City, Mo. See page 7.
The Dampney Co. of America, 50-60 Business St., Boston, Mass.
Detroit Graphite Co. of Texas, 1506 Second Nat. Bank Bldg., Houston, Texas. See page 11.
E. I. DuPont de Nemours & Co., 2100 Elston Ave., Chicago, Ill.
The Eclipse Paint & Mfg. Co., Cleveland, Ohio.
Greene Brothers, Wichita Falls, Texas. See page 61.
Hill, Hubbell & Co., 115 Davis St., San Francisco, Calif.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Lowe Bros. Co., Dayton, Ohio.

John Lucas Co., Philadelphia, Pa.
Marine Paint & Varnish Co., Inc., New Orleans, La.
McDougall-Butler Co., Inc., Evans, Water and Norton Sts., Buffalo, New York.
Paraffine Cos. Inc., San Francisco, Calif.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Pe olin Co. of America, 1112 W. 37th St., Chicago, Illinois
Ph lip Carey Co., Cincinnati, Ohio
Preservative Paint Co., Seattle, Wash.
Pro-Tar Products Co., 305 Delaware St., Kansas City, Mo.
Quigley Furnace Specialties Co., 25 Church St., New York, N. Y.
The Sherw.n-Williams Co., 601 Canal Road, Cleveland, Ohio.
St. Louis Surfacer & Paint Co., 5506 Hazel Ave., St. Louis, Mo.
Tnemec Paint & Oil Co., 3122 Roanoke Road, Kansas City, Mo
Truscon Laboratories, Carrift & G. T. R.R., Detroit, M ch.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

PAINTS, Tank

Acmo Color & White Lead Co., 8250 St. Aubin, Detroit, Mich.
American Paint & Supply Co., Dallas, Texas
Arco Co., Cleveland, Ohio
Arl ngton Paint & Varnish Co., 1329 Harison Ave., S. W. Canton, Ohio.
Black, Sivalls & Bryson, Bartlesville, Okla.
Briggs Weaver Machinery Co., Dallas, Texas
Columbian Steel Tank Co., 1401-1631 W. Twelfth St., Kansas City, Mo.
Continental Products Co., Euclid, Ohio
Continental Supply Co., St. Louis, Missouri
Cook Paint & Varnish Co., North Kansas City, Mo. See page 7.
Detroit Graphite Co. of Texas, 1506 Second Nat. Bank Bldg., Houston, Texas. See page 11.
The Eclipse Pa.nt & Mfg. Co., Cleveland, Ohio.
Greene Brothers, Wichita Falls, Texas. See page 61.
Hill, Hubbell & Co., 115 Davis St., San Francisco, Calif.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
L. O. Koven & Brother, Inc., 154 Ogden Ave., Jersey City, N.J.
Kuhn Paint & Varnish Works, Houston, Texas.
Lowe Bros. Co., Dayton, Ohio.
John Lucas Co., Philadelphia, Pa.
Marine Paint & Varnish Co., Inc., New Orleans, La.
McDougall-Butler Co., Inc., Evans, Water and Norton Sts., Buffalo, New York.
Paraffine Cos. Inc., San Francisco, Calif.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Preservative Paint Co., Seattle Wash.
Pro-Tar Products Co., 305 Delaware St., Kansas City, Mo.
Quigley Furnace Specialties Co., 25 Church St., New York, N. Y.
The Sherwin-Williams Co., 601 Canal Road, Cleveland, Ohio.
St. Louis Surfacer & Paint Co., 5506 Hazel Ave., St. Louis, Mo
Tnemec Paint & Oil Co., 3122 Roanoke Road, Kansas City, Mo. Kansas City, Mo.
Truscon Laboratories, Carriff & G. T. R.R., Detroit, Mich.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

PAINTS, Tank Car

Acmo Color & White Lead Co., 8250 St. Aubin, Detroit, Mich.
American Paint & Supply Co., Dallas, Texas
Arco Co., Cleveland, Ohio
Arl ngton Paint & Varnish Co., 1329 Harrison Ave., S. W. Canton, Ohio
Briggs Weaver Machinery Co., Dallas, Texas
Columbian Steel Tank Co., 1401-1631 W. Twelfth St., Kansas City, Mo.
Continental Products Co., Euclid, Ohio
Continental Supply Co., St. Louis, Missouri
Cook Paint & Varnish Co., North Kansas City, Mo. See page 7.
Detroit Graphite Co. of Texas, 1500 Second Nat. Bank Bldg., Houston, Texas. See page 11.
E. I. DuPont de Nemours & Co., 2.00 Elston Ave., Chicago, Ill.
The Eclipse Pa.nt & Mfg. Co., Cleveland, Ohio.
Greene Brothers, Wichita Falls, Texas. See page 61.
Hill, Hubbell & Co., 115 Davis St., San Francisco, Calif.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Lowe Bros. Co., Dayton, Ohio.
John Lucas Co., Philadelphia, Pa.
Marine Pa.nt & Varnish Co., Inc., New Orleans, La.
McDougall-Butler Co., Inc., Evans, Water and Norton Sts., Buffalo, New York.
North American Car Co., 327 S. LaSalle St., Chicago, Ill.
Paraffine Cos. Inc., San Francisco, Calif.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Preservative Paint Co., Seattle, Wash.
The Sherwin-Williams Co., 601 Canal Road, Cleveland, Ohio.
St. Louis Surfacer & Paint Co., 5506 Hazel Ave., St. Louis, Mo.
Tnemec Paint & Oil Co., 3122 Roanoke Road, Kansas City, Mo.
Truscon Laboratories, Carrift & G. T. R.R., Detroit, M ch.
Woodward, Wight & Co., Ltd New Orleans, La. See page 153.

PAINTS, Tank Car Interior

The Eclipse Pa.nt & Mfg. Co., Cleveland, Ohio.

PAINTS, Tank Headlining

Detroit Graphite Co. of Texas, 1500 Second Nat. Bank Bldg., Houston, Texas. See page 11.

PAINTS, Varnish

Acmo Color & White Lead Co., 8250 St. Aubin, Detroit, Mich.
American Paint & Supply Co., Dallas, Texas
Arco Co., Cleveland, Ohio
Arl ngton Paint & Varnish Co., 1329 Harrison Ave., S. W. Canton, Ohio
Columbian Steel Tank Co., 1401 1631 W. Twelfth St., Kansa City, Mo.
Continental Products Co., Euclid, Ohio
Cook Paint & Varnish Co., Nortl Kansas City, Mo. See page 7.
Detroit Graphite Co. of Texas, 150 Second Nat. Bank Bldg., Houston, Texas. See page 11.
E. I. DuPont de Nemours & Co. 2.00 Elston Ave., Chicago, Ill.
The Eclipse Pa.nt & Mfg. Co. Cleveland, Ohio.
Greene Brothers, Wichita Falls Texas. See page 61.
Hill, Hubbell & Co., 115 Davis St., San Francisco, Calif.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Lowe Bros. Co., Dayton, Ohio.
John Lucas Co., Philadelphia, Pa
Marine Paint & Varnish Co., Inc., New Orleans, La.
McDougall-Butler Co., Inc., Evans, Water and Norton Sts., Buffalo, New York.
Paraffine Cos. Inc., San Francisco Calif.
Peden Iron & Steel Co., Houston Texas. See page 85.
Preservative Paint Co., Seattle Wash.
The Sherwin-Williams Co., 60 Canal Road, Cleveland, Ohio.
St. Louis Surfacer & Paint Co. 5506 Hazel Ave., St. Louis, Mo
Truscon Laboratories, Carriff & G T. R.R., Detroit, Mich.
Woodward, Wight & Co., L New Orleans, La. See page 153

PAINTS, Weatherproofing

Detroit Graphite Co. of Texas. 150 Second Nat. Bank Bldg., Houston, Texas. See page 11.

PAINTS, White Lead

Acmo Color & White Lead Co., 8250 St. Aubin, Detroit, Mich.
American Paint & Supply Co. Dallas, Texas
Arco Co., Cleveland, Ohio
Arl ngton Paint & Varnish Co., 1329 Harrison Ave., S. W. Canton, Ohio
Carter White Lead Co., 12042 Peoria St., Chicago, Ill.
Cont nental Products Co., Euclid, Ohio
Columbian Steel Tank Co., 1401-1631 W. Twelfth St., Kansas City, Mo.
Continental Supply Co., St. Louis, Missouri
Cook Paint & Varnish Co., North Kansas City, Mo. See page 7.
Detroit Graphite Co. of Texas, 1506 Second Nat. Bank Bldg., Houston, Texas. See page 11.
The Eclipse Pa.nt & Mfg. Co., Cleveland, Ohio.
Greene Brothers, Wichita Falls, Texas. See page 61.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
John Lucas Co., Philadelphia, Pa.
Marine Pa.nt & Varnish Co., Inc., New Orleans, La.
McDougall-Butler Co., Inc., Evans, Water and Norton Sts., Buffalo, New York.
National Lead Co., 111 Broadway, New York City.
Peden Iron & Steel Co., Houston, Texas. See page 85.
The Sherwin-Williams Co., 601 Canal Road, Cleveland, Ohio.
St. Louis Surfacer & Paint Co., 5506 Hazel Ave., St. Louis, Mo.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

PANS, Dephlegmator

Carbondale Machine Co., Carbondale, Pa.
Chattanooga Boiler & Tank Co., Box 316, Chattanooga, Tenn.
Erie City Iron Works, Erie, Pa.
Kansas City Structural Steel Co., Kansas City, Kansas.
Pioneer Tank & Boiler Co., Box 1926, Tulsa, Okla. See page 157.
Riter-Conley Co., Oliver Bldg., Pittsburgh, Pa.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.

PANS Sweating

Bethlehem Shipbuilding Corp., Bethlehem, Pa.
Carbondale Machine Co., Carbondale, Pa.
Chattanooga Boiler & Tank Co., Box 316, Chattanooga, Tenn.
Erie City Iron Works, Erie, Pa.
United Iron Works Co., Ridge Arcade Bldg. Kansas City, Mo See page 161.

PANELS, Enclosure

Lyon Metallic Mfg. Co., Aurora, Ill

PAPER, Asbestos

Philip Carey Co., Cincinnati, Ohio

PAPER, Blue Print

Abbott-McKay Corp., 21 Pearl St., Boston, Mass.
Eugene Dietzgen Co., 162-166 W Monroe St., Chicago, Ill.
Keuffel & Esser Co., Hoboken, N. J.
Kolesch & Co., 138 Fulton St., New York, N. Y.
Paragon Machine Co., 77 South Rochester, N. Y.
Spaulding-Moss Co., 42 Franklin St., Boston, Mass.

PAPER, Filter

Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
Fort Worth Laboratories, 828½ Monroe St., Fort Worth, Texas. See page 158.
Greene Brothers, Wichita Falls, Texas. See page 61.
Griebel Instrument Co., Carbondale, Pa
The C. F. Pease Co., 866 N. Franklin St., Chicago, Ill.

PAPER, Drawing and Tracing

Spaulding-Moss Co., 42 Franklin St., Boston, Mass.

PARTITIONS, Panel

Columbia Fence & Wire Co., Dallas, Texas

PASTE

Key Boiler & Equipment Co., 27th and McCasland, E. St. Louis, Ill.

PENCILS, Drawing and Colored Leads

Spaulding-Moss Co., 42 Franklin St., Boston, Mass.

PICKS

Briggs Weaver Machinery Co., Dallas, Texas

Continental Supply Co., St. Louis, Missouri
R. B. Everett Co., Houston, Texas
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
National Supply Co., Toledo, Ohio
Oil Well Supply Co., Pittsburgh, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

PINS, Piston

The Dyer Mfg. Co., 155 Brookline St., Cambridge, Mass.

PIPE Aluminum

Aluminum Co. of America, 2400 Oliver Bldg., Pittsburgh, Pa.
Philadelphia Coppersmithing Co., 222 N. Front St., Philadelphia, Pa.
U. S. Indestructible Gasket Co., 829 E. 15th St., Brooklyn, N. Y.

PIPE. Cast Iron

American Cast Iron Pipe Co, Birmingham, Alabama
Barnhart-Davis Co., Warren, Pa.
The Brady Conveyors Corp., 20 W. Jackson Blvd., Chicago, Ill.
Continental Supply Co., St. Louis, Missouri
Grinnell Co., Inc., Providence, R.I.
Hartwell Iron Works, Houston, Texas
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Independent Foundry Co., 73 York St., Portland, Ore.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Cast Iron Pipe Co., Birmingham, Ala.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Philadelphia Coppersmithing Co., 222 N. Front St., Philadelphia, Pa.
Joseph T. Ryerson & Sons, 2558 W. 16th St., Chicago, Ill.
John Simmons Co., 104-10 Center St., New York, N. Y.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Walworth Company, 88 Pearl St., Boston, Mass.
Western Gas Construction Co., Fort Wayne, Ind.
R. D. Wood & Co., 400 Chestnut St., Philadelphia, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

PIPE, Culvert

Penn Metal Co., 675 Concord Ave., Cambridge, Mass.

PIPE, Galvanized Culvert

United Alloy Steel Corp., Canton, Ohio.

PIPE, Riveted, Bolted Culvert

United Alloy Steel Corp., Canton, Ohio.

PIPE, Fabricated

Arctic Ice Machine Co., Canton, Ohio
Briggs Weaver Machinery Co., Dallas, Texas
Chicago Steel Car Co., Chicago, Ill. See page 141.
Continental Supply Co., St. Louis, Missouri
Finucane Boiler Works, Houston, Texas.
Fort Worth Steel & Machinery Co., Fort Worth, Texas
Grinnell Co., Inc., Providence, R.I.
Jas. G. Heggie & Sons, Joliet, Ill.
L. O. Koven & Brother, Inc., 154 Ogden Ave., Jersey City, N.J.
McAleenan Bros. Co., Twenty-fifth and Railroad, Pittsburgh, Pa.
Midwest Piping & Supply Co., Second & Miller Sts., St. Louis, Mo. See page 41.
W. K. Mitchell & Co., Inc., Ellsworth St. & Schuylkill River, Philadelphia, Pa.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Pipe Bending Co., New Haven, Conn.
National Supply Co., Toledo, Ohio
National Valve & Mfg. Co., 31st and Liberty, Pittsburgh, Pa.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.

Penn Metal Co., 675 Concord Ave., Cambridge, Mass.
Petroleum Iron Works, Sharon, Pa.
Philadelphia Steel & Iron Co., 1008 Commercial Trust Bldg., Philadelphia, Pa.
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
Roessing Mfg. Company, Sharpsburg Station, Pittsburgh, Pa.
Shaw-Kendall Engineering Company, 120-130 S. Superior St. Toledo, Ohio
Standard Piping & Fittings Co., 30th and Race Sts., Philadelphia, Pa.
Thorn, J. S. Co., 12th and Allegheny Ave., Philadelphia, Pa.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Walworth Company, 88 Pearl St., Boston, Mass.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

PIPE, Gas

H. Belfield Co., 435 N. Broad St., Philadelphia, Pa.
Briggs Weaver Machinery Co., Dallas, Texas
Jas. G. Heggie & Sons, Joliet, Ill.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Jones & Laughlin Steel Corp., Rosa St., Pittsburgh, Pa.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Cast Iron Pipe Co., Birmingham, Ala.
National Supply Co., Toledo, Ohio
National Tube Co., Frick Bldg., Pittsburgh, Pa.
Oil Well Supply Co., Pittsburgh, Pa.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
John Simmons Co., 104-10 Center St., New York, N. Y.
Walworth Company, 88 Pearl St. Boston, Mass.
Western Gas Construction Co., Fort Wayne, Ind.
R. D. Wood & Co., 400 Chestnut St., Philadelphia, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.
The Youngstown Sheet & Tube Co., Youngstown, Ohio

PIPS, Lead Lined

United Lead Co., 111 Broadway, New York, N. Y.

PIPE, Riveted

Chattanooga Boiler & Tank Co., Box 316, Chattanooga, Tenn.
Chicago Bridge & Iron Works, 37 Van Buren St., Chicago, Ill. See page 148.
Chicago Steel Car Co., Chicago, Ill See page 141.
John Dollinger, Jr., Inc., Box 423 Beaumont, Texas
Duff Patents Co., Inc., 321 Union Trust Bldg., Pittsburgh, Pa.
Finucane Boiler Works, Houston Texas.
Fort Worth Steel & Machinery Co., Fort Worth, Texas
Hartwell Iron Works, Houston. Texas
Jas. G. Heggie & Sons, Joliet, Ill.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
L. O. Koven & Brother, Inc., 154 Ogden Ave., Jersey City, N.J.
McAleenan Bros. Co., Twenty-fifth and Railroad, Pittsburgh, Pa.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Valve & Mfg. Co., 31st and Liberty, Pittsburgh, Pa.
New York Engineering Co., 2 Rector St., New York, N. Y.
R. S. Newbold & Son Co., Norristown, Pa.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston Texas. See page 85.
Petroleum Iron Works, Sharon, Pa
Pioneer Tank & Boiler Co., Box 1926, Tulsa, Okla. See page 157.
Prospect Boiler Co., Ward St. and Raritan River R. R., New Brunswick, N. J.
Quaker City Iron Works, Richmond & Tioga Sts., Philadelphia, Pa.
Riter-Conley Co., Oliver Bldg., Pittsburgh, Pa.
Wm. Scaife & Sons Co., Oakmont, Pa.
John Simmons Co., 104-10 Center St., New York, N. Y.
Thorn, J. S. Co., 12th and Allegheny Ave., Philadelphia, Pa.
Walworth Company, 88 Pearl St., Boston, Mass.
Western Gas Construction Co., Fort Wayne, Ind.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

PIPE, Seamless Brass

American Brass Co., Waterbury, Conn.
H. Belfield Co., 435 N. Broad St., Philadelphia, Pa.
Briggs Weaver Machinery Co., Dallas, Texas
Chase Metal Works, Waterbury, Conn.
U. T. Hungerford Brass & Copper Co., 80 Lafayette St., New York, N. Y.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Philadelphia Coppersmithing Co., 222 N. Front St., Philadelphia Pa.
Southern Brass Mfg. Co., Houston, Texas.
Standard Piping & Fittings Co., 30th and Race Sts., Philadelphia, Pa.
Walworth Company, 88 Pearl St., Boston, Mass.
Wheeler Condenser & Engineering Corp., 149 Broadway, N. Y., N.Y

PIPE, Seamless Steel

Babcock & Wilcox Co., 85 Liberty Ave., Long Island City, N. Y.
Briggs Weaver Machinery Co., Dallas, Texas
Continental Supply Co., St. Louis, Missouri
Globe Steel Tubes Co., 1345 Burnham St., Milwaukee, Wis.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Tube Co., Frick Bldg., Pittsburgh, Pa.
National Valve & Mfg. Co., 31st and Liberty, Pittsburgh, Pa.
North American Car Co., 327 S. LaSalle St., Chicago, Ill. See page 156.
Oil Well Supply Co., Pittsburgh Pa.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Petroleum Supply Co., Houston, Texas
Philadelphia Coppersmithing Co., 222 N. Front St., Philadelphia Pa.
Pittsburgh Steel Products Co., Pittsburgh, Pa.
Joseph T. Ryerson & Sons, 2558 W. 16th St., Chicago, Ill.
Standard Piping & Fittings Co., 30th and Race Sts., Philadelphia Pa.
Union Iron Works, Selma, Ala.
Walworth Company, 88 Pearl St. Boston, Mass.
The Youngstown Sheet & Tube Co., Youngstown, Ohio

PIPE, Steam Jacketed

The Barber Asphalt Co., 1600 Arch St., Philadelphia, Pa.

PIPE, White Iron

The Brady Conveyors Corp., 20 W. Jackson Blvd., Chicago, Ill.

PIPE, Wrought Iron

Reading Iron Co., Reading, Pa.

PIPE, Wrought Iron, Line

Reading Iron Company, Reading Pa.

PIPING, High Pressure Steam

Shevlin Engineering Co., Inc., 259 W. 34th St., New York, N. Y.

PIPING, Installation

Shevlin Engineering Co., Inc., 259 W. 34th St., New York, N. Y.

PIPING, Power

Briggs Weaver Machinery Co., Dallas, Texas
Grinnell Co., Inc., Providence, R.I.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Kelly and Jones Co., Greensburg, Pa. See page 75.
Midwest Piping & Supply Co., Second & Miller Sts., St. Louis, Mo. See page 41.
W. K. Mitchell & Co., Inc., Ellsworth St. & Schuylkill River. Philadelphia, Pa.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Pipe Bending Co., New Haven, Conn.
National Supply Co., Toledo, Ohio
National Valve & Mfg. Co., 31st and Liberty, Pittsburgh, Pa.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Roessing Mfg. Company, Sharpsburg Station, Pittsburgh, Pa.
Shaw-Kendall Engineering Company, 120-130 S. Superior St., Toledo, Ohio
John Simmons Co., 104-10 Center St., New York, N. Y.
Standard Piping & Fittings Co., 30th and Race Sts., Philadelphia, Pa.
Urbauer-Atwood Co., 1450 S. 2nd St., St. Louis, Mo.
Walworth Company, 88 Pearl St., Boston, Mass.

PIPING, Water

Shevlin Engineering Co., Inc., 259 W. 34th St., New York, N. Y.

PISTONS

The Dyer Mfg. Co., 155 Brookline St., Cambridge, Mass.

PLANERS, Metal Working

Brazelton, Wessendorff & Nelms Houston, Texas
Briggs Weaver Machinery Co., Dallas, Texas
National Supply Co., Toledo, Ohio
Peden Iron & Steel Co., Houston Texas. See page 85.
The Randle Machinery Co., 1723 Power St., Cincinnati, Ohio
Reed-Prentice Co., Worcester, Mass
Joseph T. Ryerson & Sons, 2558 W. 16th St., Chicago, Ill.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

PLANIMETERS

Abbott-McKay Corp., 21 Pearl St. Boston, Mass.
American Schaeffer & Budenberg Corp., Berry & S. 5th St. Brooklyn, N. Y. See page 153
The Bristol Co., Waterbury, Conn See page 154.
Eugene Dietzgen Co., 162-166 W Monroe St., Chicago, Ill.
Eureka Packing Co., 78-80 Murray St., New York, N. Y.
W. & L. E. Gurley, Troy, N. Y.
Keuffel & Esser Co., Hoboken N. J.
Manning, Maxwell & Moore, Inc. 100 E. 42nd St., New York City.
Refinery Supply Co., Tulsa, Okla See page 44.
Jas. L. Robertson & Son, 79-80 Murray St., New York, N. Y.
Star Brass Mfg. Co., 53 Oliver St. Boston, Mass.
Trill Indicator Co., Center St., Corry, Pa.
Williams, Brown & Earle, 918 Chestnut St., Philadelphia, Pa See page 149
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.

PLANTS, Complete, Natural Gasoline

Dean E. Foster, New Wright Bldg., Tulsa, Okla.
Gasoline Recovery Co., People Bank Bldg., Charleston, W. Va

PLANTS, Contact Filter

Arthur G. McKee & Co., 2422 Euclid Ave., Cleveland, Ohio
The Widdell Engineering Co., 512 American Bk. Bldg., Kansas City, Mo.

PLANTS, Continuous Treating

Arthur G. McKee & Co., 2422 Euclid Ave., Cleveland, Ohio
The Widdell Engineering Co., 512 American Bk. Bldg., Kansas City, Mo.

PLANTS, Gasoline Absorption

The Adsole Co. of America, 201 Los Angeles City Club Bldg., Los Angeles, Cal.
C. F. Braun & Co., Alhambra, Cal. See pages 78-79.

PLANTS, Gasoline Absorption, Portable,

C. F. Braun & Co., Alhambra, Cal. See page 78-79.

PLANTS, Portable, Natural Gasoline

Gasoline Recovery Co., Peoples Bank Bldg., Charleston, W. Va.

PLANTS, Wax

Arthur G. McKee & Co., 2422 Euclid Ave., Cleveland, Ohio
The Widdell Engineering Co., 512 American Bk. Bldg., Kansas City, Mo.

PLATES, Netting

Erie City Iron Works, Erie, Pa.
Hendrick Mfg. Co., Carbondale, Pa.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

PLATES, Screw

Greenfield Tap & Die Corp'n., Greenfield, Mass.

PLATES, Steel

Allegheny Steel Co., Pittsburgh, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
Carnegie Steel Co., Carnegie Bldg., Pittsburgh, Pa.
Chattanooga Boiler & Tank Co., Box 316, Chattanooga, Tenn.
Chicago Bridge & Iron Works, 37 Van Buren St., Chicago, Ill. See page 148
Chicago Steel Car Co., Chicago, Ill. See page 141.
Colburn Gear & Mfg. Co., 98 Holmes St., Norfolk Downs, Mass.
Columbian Steel Tank Co., 1401-1631 W. Twelfth St., Kansas City, Mo.
The Cullen Co., Clinton, Iowa
John Dollinger, Jr., Inc., Box 423, Beaumont, Texas
Erie City Iron Works, Erie, Pa.
Fort Worth Steel & Machinery Co., Fort Worth, Texas
Harrisburg Pipe & Pipe Bending Co., Houston, Texas
Hartwell Iron Works, Houston, Texas
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Jones & Laughlin Steel Corp., Rosa St., Pittsburgh, Pa.
Kansas City Structural Steel Co., Kansas City, Kansas.
The Kaw Boiler Works Co., Kansas City, Kans. See page 117.
Luken Steel Co., C. E. Naylor, Houston, Texas.
Milwaukee Boiler Mfg. Co., 35th St. & National Ave., Milwaukee, Wis.
Mosher Steel and Machinery Co., 900 S. Austin St., Dallas, Texas
North American Car Co., 327 S. LaSalle St., Chicago, Ill. See page 156.
Ocean Shore Iron Works, 550 Eighth St., San Francisco, Calif.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Petroleum Iron Works, Sharon, Pa.
Pioneer Tank & Boiler Co., Box 1926, Tulsa, Okla. See page 157.
A. R. Purdy Co., Inc., 790-4 Greenwich St., New York, N. Y.
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
Riter-Conley Co., Oliver Bldg., Pittsburgh, Pa.
Joseph T. Ryerson & Sons, 2558 W. 16th St., Chicago, Ill.
Sculley Steel & Iron Co., Chicago, Ill.
The Stanwood Corp., Cincinnati, O.
Texas Carnegie Steel Assn., Galveston, Texas.
Tulsa Boiler & Machinery Co., P. O. Box 1963, Tulsa, Okla.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.
Worth Steel Co., Calymont, Delaware.
The Youngstown Boiler & Tank Co., Youngstown, Ohio
The Youngstown Sheet & Tube Co., Youngstown, Ohio

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TULSA KANSAS CITY

PLUGS, Bull

Continental Supply Co., St. Louis, Missouri
National Supply Co., Toledo, Ohio
Oil Well Supply Co., Pittsburgh Pa.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Pennsylvania Forge Co., Bridesburg, Philadelphia, Pa. See page 33.
Petroleum Supply Co., Houston Texas
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

PLUGS, Flue

Plouff Co., 170 Summer St., Boston, Mass.

PLUGS, Fusible

Briggs Weaver Machinery Co., Dallas, Texas
Continental Supply Co., St. Louis, Missouri
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Detroit Lubricator Co., 5938 Trumbull Ave., Detroit, Mich.
John Dollinger, Jr., Inc., Box 423 Beaumont, Texas
Erie City Iron Works, Erie, Pa.
Greene Brothers, Wichita Falls, Texas. See page 61.
Grinnell Co., Inc., Providence, R.I.
Heine Boiler Co., St. Louis, Mo.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Houston Armature Works, Houston, Texas
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Lunkenheimer Co., Cincinnati, Ohio. See page 17.
Milwaukee Boiler Mfg. Co., 35th St. & National Ave., Milwaukee, Wis.
National Supply Co., Toledo, Ohio
Ocean Shore Iron Works, 550 Eighth St., San Francisco, Calif
Ohio Injector Co., S. Main St., Wadsworth, Ohio.
Oil Well Supply Co., Pittsburgh, Pa.
Henry B. Pancoast & Co., 940-96. N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston Texas. See page 85.
Petroleum Supply Co., Houston Texas
Plouff Co., 170 Summer St., Boston, Mass.
Wm. Powell Co., Cincinnati, Ohio
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex
Southern Brass Mfg. Co., Houston, Texas.
Star Brass Mfg. Co., 53 Oliver St., Boston, Mass.
U. S. Indestructible Gasket Co., 829 E. 15th St., Brooklyn, N. Y.
Walworth Company, 88 Pearl St., Boston, Mass.
The D. T. Williams Valve Co., Cincinnati, Ohio. See page 35.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.

PLUGS, Still

Greene Brothers, Wichita Falls, Texas. See page 61.
National Supply Co., Toledo, Ohio
The Ohio Steel Foundry Co., Springfield, Ohio
Oil Conservation Engineering Co., Cleveland, Ohio. See page 4.
Peden Iron & Steel Co., Houston Texas. See page 85.
Pennsylvania Forge Co., Bridesburg, Philadelphia, Pa. See page 33.
John Simmons Co., 104-10 Center St., New York, N. Y.
Steel Improvement & Forge Co., Cleveland, Ohio.

PLUNGERS, Porcelain

Aldrich Pump Co., Foot of Pine St., Allentown, Pa.

POLES, Gauge

Butler Mfg. Co., 1124 Grand Ave., Kansas City, Mo.
Continental Supply Co., St. Louis, Missouri
Fort Worth Laboratories, 828½ Monroe St., Fort Worth, Texas See page 158.
Greene Brothers, Wichita Falls, Texas. See page 61.
Marsh Gauge Pole Co., Titusville, Pa.
Oil Well Supply Co., Pittsburgh, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Quaker City Iron Works, Richmond & Tioga Sts., Philadelphia, Pa.

PREHEATERS

The Air Preheater Corp., 25 Broadway, New York, N. Y.
The Alexander Milburn Co., 1410 W. Baltimore St., Baltimore, Md
American Tank Co., Okla. City, Okla.
Babcock & Wilcox Co., 85 Liberty St., New York, N. Y.
The Badenhausen Corp., 1011 Chestnut St., Philadelphia, Pa.
C. F. Braun & Co., Alhambra, Cal See page 78-79.
Brazelton, Wessendorff & Nelms Houston, Texas
J. P. Devine Co., 1380 Clinton Buffalo, N. Y.
Dean E. Foster, New Wright Bldg., Tulsa, Okla.
Griscom-Russell Co., 285 Madison Ave., New York, N. Y. See page 133.
MacLeod Company, Cincinnati Ohio
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City
Newton Process Mfg. Co., Fullerton, California.
Ross Heater & Mfg. Co., Inc. Buffalo, N. Y.
Southwestern Engineering Co., Hollingsworth Bldg., Los Angeles Cal. See page 109.
Tulsa Boiler & Machinery Co., P. O. Box 1963, Tulsa, Okla.
Whitlock Coil Pipe Co., Hartford, Conn.

PREHEATING, Torches

The Alexander Milburn Co., 1410 W. Baltimore St., Baltimore, Md
American Gas Furnace Co., Lafayette, Spring and Elizabeth St. Elizabeth, N. J.
Brazelton, Wessendorff & Nelms Houston, Texas
Carbic Mfg. Co., Duluth, Minn.
Hauck Mfg. Co., 127 Tenth St., Brooklyn, N. Y.
MacLeod Company, Cincinnati Ohio
Manning, Maxwell & Moore, Inc. 100 E. 42nd St., New York City.
National Oxygen Co., 5811 W. 66th St., Chicago, Ill.
Oxweld Acetylene Co., Long Island City, L. I., N. Y.
Smiths Inventions, Inc., 2630 Fourth St., S.E., Minneapolis, Minn.
Torchweld Equipment Co., 224 No Carpenter St., Chicago, Ill.

PRESSES, Wax

Henry Vogt Machine Co., Louisville, Ky. See page 5.

PREVENTERS, Smoke

Burke Engineering Co., Holland Mich.
S. Obermayer Co., 2563 W. 18th St. Chicago, Ill.
Plouff Co., 170 Summer St., Boston, Mass.
Scharf Smoke Preventing Co., Ypsilant, Michigan.
Steam Boiler Equipment Co., 1750 Monadnock Block, Chicago, Ill.

PROCESS, Lubricating Oil

Byron Jackson Pump Mfg. Co., Inc., 412 S. San Pedro St., Los Angeles, Calif.

PROCESS Work

C. B. Roberts Engineering Co., 2[illegible] Broadway, New York, N. Y.

PROTECTION APPARATUS, Eye

Hall & Brown Wood Working Machine Co., Broadway, Tyler & Ninth Sts., St. Louis, Mo.
Oxweld Acetylene Co., Long Island City, L. I., N. Y.
Pulmosan Safety Equipment Co. 45 Willoughby St., Brooklyn New York. See page 159.
Torchweld Equipment Co., 224 No Carpenter St., Chicago, Ill.

PULLEYS

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
The Bessemer Gas Engine Co., Grove City, Pa. See inside back cover.
A. & F. Brown Co., 79 Barclay St., New York, N. Y.
Colburn Gear & Mfg. Co., 98 Holmes St., Norfolk Downs, Mass.
Continental Supply Co., St. Louis, Missouri
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
R. & J. Dick Co., Inc., Passiac, N. J.
Falls Clutch & Machinery Co., Cuyahoga Falls, Ohio.
The Hill Clutch Machine & Foundry Co., Cleveland, Ohio
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Houston Armature Works, Houston, Texas
Jones, W. A., Foundry & Machine Co., 4415 W. Roosevelt Road, Chicago, Illinois
Manning, Maxwell & Moore, Inc. 100 E. 42nd St., New York City
Moloch Co., Kaukauna, Wis.
National Supply Co., Toledo, Ohio
Peden Iron & Steel Co., Houston, Texas. See page 85.
A. R. Purdy Co., Inc., 790-4 Greenwich St., New York, N. Y.
Southern Engine & Pump Co., Houston, Texas
The Stanwood Corp., Cincinnati, O
Texas Belting Co., Houston, Texas
Union Iron Works, Selma. Ala.
T. B. Wood's Sons Co., Chambersburg, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

PULLEYS, Clutch

A. & F. Brown Co., 79 Barclay St. New York, N. Y.

PULVERIZERS

Jeffrey Mfg. Co., 904-99 No. Fourth St., Columbus, Ohio.
Moloch Co., Kaukauna, Wis.

PUMPS

Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
Aldrich Pump Co., Foot of Pine St., Allentown, Pa.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
American Steam Pump Co., Battle Creek, Mich.
The American Well Works, Aurora Illinois.
Babcock-Wilcox and Goldie-McCulloch, Ltd., Galt, Ontario, Canada
The Barber Asphalt Co., 1000 Arch St., Philadelphia, Pa.
Barrett, Haentjens & Co., Pine and Buttonwood Sts., Hazleton, Pa.
The Bessemer Gas Engine Co. Grove City, Pa. See inside back cover.
Bethlehem Shipbuilding Corp., Bethlehem, Pa.
Briggs Weaver Machinery Co., Dallas, Texas
Buffalo Steam Pump Co., 490 Broadway, Buffalo, N. Y.
Butler Mfg. Co., 1124 Grand Ave. Kansas City, Mo.
Columbus Steam Pump Works Co. 85 W. Broad St., Columbus, O.
Continental Supply Co., St. Louis, Missouri
M. T. Davidson Co., 154 Nassau St., New York, N. Y.
De Laval Steam Turbine Co., Trenton, N. J. See page 123.
Dean Bros. Pump Co., Indianapolis, Ind.
Deming Co, Salem, Ohio
Economy Pumping Machinery Co. 104-18 N. Curtis St., Chicago, Ill
R. B. Everett Co., Houston, Texas
Fairbanks, Morse & Co., 900 S. Wabash Ave., Chicago, Ill.
Foster Pump Wks, Inc., 36 Bridge St., Brooklyn, N. Y.
Frederick Iron & Steel Co., Frederick, Md.
Furness Bros. Co., 1615 W. Walnut St., Chicago, Ill.
Gardner-Governor Co., Quincy, Ill
F. W. Gartner Co., Houston, Texas
Gilbert & Barker Mfg. Co., Springfield, Mass.
Goulds Pumps, Inc., Seneca Falls, N. Y. See page 97.
A. D. Granger Co., 15 Park Row, New York, N. Y.
Greene Brothers, Wichita Falls Texas. See page 61.
Guild & Garrison, 463 Kent Ave. Brooklyn, N. Y.
A. L. Henderer's Sons, Maryland Ave., & Beech St., Wilmington, Delaware.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Kinney Mfg. Co., 3529-3541 Washington St., Boston, Mass.
Lamert & Mann Co., Wood & Waknut Sts., Chicago, Ill.
Langstadt-Meyer Co., Appleton, Wis.
Le Courteney Co., 4 Maine, Newark, N. J.
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.
May Machinery Co., Second National Bank Bldg., Houston, Tex.
John H. McGown Co., 910 4th Natl. Bk. Bldg., Cincinnati, Ohio
Moloch Co., Kaukauna, Wis.
National Supply Co., Toledo, Ohio
Peden Iron & Steel Co., Houston, Texas. See page 85.
Pittsburgh Machine Tool Co., Corry Ave., Braddock, Pa.
The P. H. & F. M. Roots Co., Connersville, Ind. See inside front cover.
Geo. D. Roper Corp., Rockford, Ill.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Scranton Pump Co., Scranton, Pa.
Southern Engine & Pump Co., Houston, Texas
The Stanwood Corp., Cincinnati, O.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
St. Louis Pump & Equipment Co., St. Louis, Mo.
Tennant Co., Union National Bank Bldg., Houston, Texas.
Westco-Chippewa Pump Co., Davenport, Iowa.
Wilson-Snyder Manufacturing Co., Pittsburg, Pa.

PUMPS, Air

Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
Allen & Billmyre Co., Inc., Grand Central Palace, New York City, N. Y.
American Steam Pump Co., Battle Creek, Mich.
Barrett, Haentjens & Co., Pine and Buttonwood Sts., Hazleton, Pa.
Beach-Russ Co., 30 Church St., New York, N. Y.
The Bessemer Gas Engine Co., Grove City, Pa.
Bethlehem Shipbuilding Corp., Bethlehem, Pa.
Briggs Weaver Machinery Co., Dallas, Texas
Brunner Mfg. Co., Utica, N. Y.
Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
Connersville Blower Co., Connersville, Ind.
Continental Supply Co., St. Louis, Missouri
Croll-Reynolds Eng'rg. Co., Inc., 95 Liberty St., New York, N. Y.
M. T. Davidson Co., 154 Nassau St., New York, N. Y.
J. P. Devine Co., 1380 Clinton, Buffalo, N. Y.
Eclipse Fuel Engineering Co., Rockford, Ill.
Elliott Company, Jeannette, Pa. See page 101.
Foster Pump Wks, Inc., 36 Bridge St., Brooklyn, N. Y.
Gardner-Governor Co., Quincy, Ill.
Greene Brothers, Wichita Falls, Texas. See page 61.
Guild & Garrison, 463 Kent Ave., Brooklyn, N. Y.
Houston Armature Works, Houston, Texas
Indiana Air Pump Co., 816 Indiana Pythian Bldg., Indianapolis, Indiana
Lamert & Mann Co., Wood & Waknut Sts., Chicago, Ill.
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.
Lucas Pump & Tool Co., 427 Valley St., Dayton, Ohio
May Machinery Co., Second National Bank Bldg., Houston, Tex.
John H. McGown Co., 910 4th Natl. Bk. Bldg., Cincinnati, Ohio
Mesta Machine Co., Pittsburgh, Pa.
National Supply Co., Toledo, Ohio
Oil Well Supply Co., Pittsburgh, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
The P. H & F. M. Roots Co., Connersville, Ind. See inside front cover.
Ross Heater & Mfg. Co., Inc., Buffalo, N. Y.

Schutte & Koerting Co., 1165 Thompson St., Philadelphia, Pa. See page 149.
Southern Engine & Pump Co., Houston, Texas
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Tennant Co., Union National Bank Bldg., Houston, Texas.
Trane Co., LaCrosse, Wis.
Twinvolute Pump & Mfg. Co., 216 High St., Newark, N. J.
Wagener Steam Pump Co., Canton, Ohio.
Western Machinery Co., Los Angeles, Calif.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

PUMPS, Air Rotary

Crowell Mfg. Co., 315 Franklin Ave., Brooklyn, N. Y.

PUMPS, Ammonia

Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
American Steam Pump Co., Battle Creek, M.ch.
Baker Ice Machine Co., 3601 Evans St., Omaha, Nebr.
Beach-Russ Co., 30 Church St., New York, N. Y.
Blackmer Pump Co., Grand Rapids, Mich.
Briggs Weaver Machinery Co., Dallas, Texas
Buffalo Steam Pump Co., 490 Broadway, Buffalo, N. Y.
Carbondale Machine Co., Carbondale, Pa.
Columbus Steam Pump Works Co., 85 W. Broad St., Columbus, O.
M. T. Davidson Co., 154 Nassau St., New York, N. Y.
Foster Pump Wks, Inc., 36 Bridge St., Brooklyn, N. Y.
Gardner-Governor Co., Quincy, Ill.
Goulds Pumps, Inc., Seneca Falls, N. Y. See page 97.
Greene Brothers, Wichita Falls, Texas. See page 61.
Guild & Garrison, 463 Kent Ave., Brooklyn, N. Y.
Byron Jackson Pump Mfg. Co., Inc., S. San Pedro St., Los Angeles, Calif.
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.
May Machinery Co., Second National Bank Bldg., Houston, Tex.
Geo. D. Roper Corp., Rockford, Ill.
Southern Engine & Pump Co., Houston, Texas
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Tennant Co., Union National Bank Bldg., Houston, Texas.
Viking Pump Co., Cedar Falls, Ia.
Wagener Steam Pump Co., Canton, Ohio.

PUMPS, Boiler Feed

Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
Aldrich Pump Co., Foot of Pine St., Allentown, Pa.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
American Steam Pump Co., Battle Creek, Mich.
The American Well Works, Aurora, Illinois.
Austin-Mason Co., 15 Park Row, New York, N. Y.
Bethlehem Shipbuilding Corp., Bethlehem, Pa.
Blakeslee Mfg. Co., Du Quoin, Ill.
Briggs Weaver Machinery Co., Dallas, Texas
Buffalo Steam Pump Co., 490 Broadway, Buffalo, N. Y.
Columbus Steam Pump Works Co., 85 W. Broad St., Columbus, O.
Continental Supply Co., St. Louis, Missouri
Coppus Engineering Corp., 342-348 Park Ave., Worcester, Mass.
M. T. Davidson Co., 154 Nassau St., New York, N. Y.
De Laval Steam Turbine Co., Trenton, N. J. See page 123.
Dean Bros. Pump Co., Indianapolis, Ind.
Deming Co, Salem, Ohio
Eclipse Fuel Engineering Co., Rockford, Ill.
Economy Pumping Machinery Co., 104-18 N. Curtis St., Chicago, Ill.
Fairbanks, Morse & Co., 900 S. Wabash Ave., Chicago, Ill.
Foster Pump Wks, Inc., 36 Bridge St., Brooklyn, N. Y.
Frederick Iron & Steel Co., Frederick, Md.
Furness Bros. Co., 1615 W. Walnut St., Chicago, Ill.
Gardner-Governor Co., Quincy, Ill.
Gouds Pumps, Inc., Seneca Falls, N. Y. See page 97.
Greene Brothers, Wichita Falls, Texas. See page 61.
Guild & Garrison, 463 Kent Ave., Brooklyn, N. Y.
M. W. Jamieson & Co., 1309 Fourth Ave., Warren, Pa.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Le Courteney Co., 4 Maine, Newark, N. J.
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.
Lucas Pump & Tool Co., 427 Valley St., Dayton, Ohio
May Machinery Co., Second National Bank Bldg., Houston, Tex.
John H. McGown Co., 910 4th Natl. Bk. Bldg., Cincinnati, Ohio
National Steam Pump Wks., Upper Sandusky, Ohio
Nat onal Supply Co., Toledo, Ohio
National Transit Pump & Machine Co., Oil City, Pa.
Oil Well Supply Co., Pittsburgh, Pa.
H. A. Paine Co., 419-20 Cotton Exchange Bldg., Houston, Texas.
Peden Iron & Steel Co., Houston, Texas. See page 85.
The Randle Machinery Co., 1723 Power St., Cincinnati, Ohio
Rider-Erickson Engine Corp., 11 Broadway, New York, N. Y.
Geo. D. Roper Corp., Rockford, Ill.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Scranton Pump Co., Scranton, Pa.
Southern Engine & Pump Co., Houston, Texas
The Stanwood Corp., Cincinnati, O.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Tennant Co., Union National Bank Bldg., Houston, Texas.
Trane Co., LaCrosse, Wis.
Twinvolute Pump & Mfg. Co., 216 High St., Newark, N. J.
Union Iron Works, Selma, Ala.
Vogt Brothers Mfg. Co., 1402 W. Main St., Louisville, Ky.
Wagener Steam Pump Co., Canton, Ohio.
Walworth Company, 88 Pearl St., Boston, Mass.
Westco-Chippewa Pump Co., Davenport, Iowa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

PUMPS, Cargo

American Steam Pump Co., Battle Creek, Mich.
Buffalo Steam Pump Co., 490 Broadway, Buffalo, N. Y.
M. T. Davidson Co., 154 Nassau St., New York, N. Y.
De Laval Steam Turbine Co., Trenton, N. J. See page 123.
Dean Bros. Pump Co., Indianapolis, Ind.
Fairbanks, Morse & Co., 900 S. Wabash Ave., Chicago, Ill.
Goulds Pumps, Inc., Seneca Falls, N. Y. See page 97.
Kinney Mfg. Co., 3529-3541 Washington St., Boston, Mass.
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.
May Machinery Co., Second National Bank Bldg., Houston, Tex.
John H. McGown Co., 910 4th Natl. Bk. Bldg., Cincinnati, Ohio
National Transit Pump & Machine Co., Oil City, Pa.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Southern Engine & Pump Co., Houston, Texas
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Tennant Co., Union National Bank Bldg., Houston, Texas.
Twinvolute Pump & Mfg. Co., 216 High St., Newark, N. J.
Wagener Steam Pump Co., Canton, Ohio.
Wilson-Snyder Manufacturing Co., Pittsburg, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

PUMPS, Centrifugal

Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.

Aldrich Pump Co., Foot of Pine St., Allentown, Pa.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
American Steam Pump Co., Battle Creek, Mich.
The American Well Works, Aurora, Illinois.
Babcock-Wilcox and Goldie-McCulloch, Ltd., Galt, Ontario, Canada
Barrett, Haentjens & Co., Pine and Buttonwood Sts., Hazleton, Pa.
Beach-Russ Co., 30 Church St., New York, N. Y.
Bethlehem Shipbuilding Corp., Bethlehem, Pa.
Briggs Weaver Machinery Co., Dallas, Texas
Buffalo Steam Pump Co., 490 Broadway, Buffalo, N. Y.
Columbus Steam Pump Works Co., 85 W. Broad St., Columbus, O.
Continental Supply Co., St. Louis, Missouri
Cook Motor Co., Delaware, Ohio.
M. T. Davidson Co., 154 Nassau St., New York, N. Y.
De Laval Steam Turbine Co., Trenton, N. J. See page 123.
Domestic Engine & Pump Co., Shippensburg, Pa.
C. A. Dunham Co., The Dunham Bldg., 450 E. Ohio St., Chicago, Illinois
Eclipse Fuel Engineering Co., Rockford, Ill.
Economy Pumping Machinery Co., 104-18 N. Curtis St., Chicago, Ill.
R. B. Everett Co., Houston, Texas
Fairbanks, Morse & Co., 900 S. Wabash Ave., Chicago, Ill.
Foster Pump Wks, Inc., 36 Bridge St., Brooklyn, N. Y.
Frederick Iron & Steel Co., Frederick, Md.
F. W. Gartner Co., Houston, Texas.
Gouds Pumps, Inc., Seneca Falls, N. Y. See page 97.
Greene Brothers, Wichita Falls, Texas. See page 61.
Heer Gas & Oil Engine Co., Portsmouth, Ohio.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Indiana Air Pump Co., 816 Indiana Pythian Bldg., Indianapolis, Indiana
Ingersoll-Rand Co., 11 Broadway, New York, N. Y.
Byron Jackson Pump Mfg. Co., Inc., S. San Pedro St., Los Angeles, Calif.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Le Courteney Co., 4 Maine, Newark, N. J.
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.
May Machinery Co., Second National Bank Bldg., Houston, Tex.
John H. McGown Co., 910 4th Natl. Bk. Bldg., Cincinnati, Ohio
Moloch Co., Kaukauna, Wis.
National Supply Co., Toledo, Ohio
H. A. Paine Co., 419-20 Cotton Exchange Bldg., Houston, Texas.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Pittsburgh Machine Tool Co., Corry Ave., Braddock, Pa.
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
Rider-Erickson Engine Corp., 11 Broadway, New York, N. Y.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Schutte & Koerting Co., 1165 Thompson St., Philadelphia, Pa. See page 149.
Scranton Pump Co., Scranton, Pa.
Southern Engine & Pump Co., Houston, Texas
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Tennant Co., Union National Bank Bldg., Houston, Texas.
Tips Foundry & Machine Co., Austin, Texas
Trane Co., LaCrosse, Wis.
Twinvolute Pump & Mfg. Co., 216 High St., Newark, N. J.
Union Engineering Co., Cleveland, Ohio.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Universal Motor Co., 39 Ceape St., Oshkosh, Wis.
Westco-Chippewa Pump Co., Davenport, Iowa.
Western Iron & Foundry Co., Wichita, Kansas. See page 89.
Wilson-Snyder Manufacturing Co., Pittsburg, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

PUMPS, Hard Lead Centrifugal

United Lead Co., 111 Broadway, New York, N. Y.

PUMPS, Circulating

Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
Aldrich Pump Co., Foot of Pine St., Allentown, Pa.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
American Steam Pump Co., Battle Creek, Mich.
The American Well Works, Aurora, Illinois.
Babcock-Wilcox and Goldie-McCulloch, Ltd., Galt, Ontario, Canada
Barrett, Haentjens & Co., Pine and Buttonwood Sts., Hazleton, Pa.
Beach-Russ Co., 30 Church St., New York, N. Y.
Bethlehem Shipbuilding Corp., Bethlehem, Pa.
Briggs Weaver Machinery Co., Dallas, Texas
Buffalo Steam Pump Co., 490 Broadway, Buffalo, N. Y.
Columbus Steam Pump Works Co., 85 W. Broad St., Columbus, O.
Continental Supply Co., St. Louis, Missouri
M. T. Davidson Co., 154 Nassau St., New York, N. Y.
De Laval Steam Turbine Co., Trenton, N. J. See page 123.
Dean Bros. Pump Co., Indianapolis, Ind.
J. P. Devine Co., 1380 Clinton, Buffalo, N. Y.
Economy Pumping Machinery Co., 104-18 N. Curtis St., Chicago, Ill.
Foster Pump Wks, Inc., 36 Bridge St., Brooklyn, N. Y.
Frederick Iron & Steel Co., Frederick, Md.
Furness Bros. Co., 1615 W. Walnut St., Chicago, Ill.
Gardner-Governor Co., Quincy, Ill.
Goulds Pumps, Inc., Seneca Falls, N. Y. See page 97.
Greene Brothers, Wichita Falls, Texas. See page 61.
Guild & Garrison, 463 Kent Ave., Brooklyn, N. Y.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Kinney Mfg. Co., 3529-3541 Washington St., Boston, Mass.
Le Courteney Co., 4 Maine, Newark, N. J.
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.
Maxon Premix Burner Co., Muncie, Ind.
May Machinery Co., Second National Bank Bldg., Houston, Tex.
John H. McGown Co., 910 4th Natl. Bk. Bldg., Cincinnati, Ohio
National Steam Pump Wks., Upper Sandusky, Ohio
National Supply Co., Toledo, Ohio
National Transit Pump & Machine Co., Oil City, Pa.
Pittsburgh Machine Tool Co., Corry Ave., Braddock, Pa.
Rider-Erickson Engine Corp., 11 Broadway, New York, N. Y.
The P. H. & F. M. Roots Co., Connersville, Ind. See inside front cover.
Geo. D. Roper Corp., Rockford, Ill.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Scranton Pump Co., Scranton, Pa.
Southern Engine & Pump Co., Houston, Texas
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Tennant Co., Union National Bank Bldg., Houston, Texas.
Tips Foundry & Machine Co., Austin, Texas
Trane Co., LaCrosse, Wis.
Twinvolute Pump & Mfg. Co., 216 High St., Newark, N. J.
Wagener Steam Pump Co., Canton, Ohio.
Westco-Chippewa Pump Co., Davenport, Iowa.
Western Gas Construction Co., Fort Wayne, Ind.
Wilson-Snyder Manufacturing Co., Pittsburg, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

PUMPS Condensation

Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
Aldrich Pump Co., Foot of Pine St., Allentown, Pa.

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
American Steam Pump Co., Battle Creek, Mich.
Babcock-Wilcox and Goldie-McCulloch, Ltd., Galt, Ontario, Canada
Barrett, Haentjens & Co., Pine and Buttonwood Sts., Hazleton, Pa.
Beach-Russ Co., 30 Church St., New York, N. Y.
Bethlehem Shipbuilding Corp., Bethlehem, Pa.
Briggs Weaver Machinery Co., Dallas, Texas
Buffalo Steam Pump Co., 490 Broadway, Buffalo, N. Y.
Columbus Steam Pump Works Co., 85 W. Broad St., Columbus, O.
M. T. Davidson Co., 154 Nassau St., New York, N. Y.
De Laval Steam Turbine Co., Trenton, N. J. See page 123.
Dean Bros. Pump Co., Indianapolis, Ind.
Economy Pumping Machinery Co., 104-18 N. Curtis St., Chicago, Ill.
Elliott Company, Jeannette, Pa. See page 101.
Fairbanks, Morse & Co., 900 S. Wabash Ave., Chicago, Ill.
Frederick Iron & Steel Co., Frederick, Md.
Gardner-Governor Co., Quincy, Ill.
Goulds Pumps, Inc., Seneca Falls, N. Y. See page 97.
Guild & Garrison, 463 Kent Ave., Brooklyn, N. Y.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Lamert & Mann Co., Wood & Waknut Sts., Chicago, Ill.
Le Courteney Co., 4 Maine, Newark, N. J.
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.
May Machinery Co., Second National Bank Bldg., Houston, Tex.
John H. McGown Co., 910 4th Natl. Bk. Bldg., Cincinnati, Ohio
National Supply Co., Toledo, Ohio
Pittsburgh Machine Tool Co., Corry Ave., Braddock, Pa.
Rider-Erickson Engine Corp., 11 Broadway, New York, N. Y.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Scranton Pump Co., Scranton, Pa.
Southern Engine & Pump Co., Houston, Texas
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Tennant Co., Union National Bank Bldg., Houston, Texas.
Trane Co., LaCrosse, Wis.
Twinvolute Pump & Mfg. Co., 216 High St., Newark, N. J.
Vogt Brothers Mfg. Co., 1402 W. Main St., Louisville, Ky.
Wagener Steam Pump Co., Canton, Ohio.
Westco-Chippewa Pump Co., Davenport, Iowa.
Wheeler Condenser & Engineering Corp., 149 Broadway, N. Y., N.Y
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

PUMPS—Dup'ex Steam

Columbus Steam Pump Works Co., 85 W. Broad St., Columbus, O.

PUMPS, Force

Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
Aldrich Pump Co., Foot of Pine St., Allentown, Pa.
Briggs Weaver Machinery Co., Dallas, Texas
Buffalo Steam Pump Co., 490 Broadway, Buffalo, N. Y.
Continental Supply Co., St. Louis, Missouri
Cook Motor Co., Delaware, Ohio.
M. T. Davidson Co., 154 Nassau St., New York, N. Y.
Dean Bros. Pump Co., Indianapolis, Ind.
Deming Co, Salem, Ohio
Domestic Engine & Pump Co., Shippensburg, Pa.
R. B. Everett Co., Houston, Texas
Fairbanks, Morse & Co., 900 S. Wabash Ave., Chicago, Ill.
Gardner-Governor Co., Quincy, Ill.
Gouds Pumps, Inc., Seneca Falls, N. Y. See page 97.
Greene Brothers, Wichita Falls, Texas. See page 61.
Guild & Garrison, 463 Kent Ave., Brooklyn, N. Y.
A. L. Henderer's Sons, Maryland Ave., & Beech St., Wilmington, Delaware. See page 143.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Lamert & Mann Co., Wood & Waknut Sts., Chicago, Ill.
May Machinery Co., Second National Bank Bldg., Houston, Tex.
John H. McGown Co., 910 4th Natl. Bk. Bldg., Cincinnati, Ohio
National Supply Co., Toledo, Ohio
Oil Well Supply Co., Pittsburgh, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Pittsburgh Machine Tool Co., Corry Ave., Braddock, Pa.
Geo. D. Roper Corp., Rockford, Ill.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Southern Engine & Pump Co., Houston, Texas
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Tennant Co., Union National Bank Bldg., Houston, Texas.
Twinvolute Pump & Mfg. Co., 216 High St., Newark, N. J.
Union Iron Works, Selma, Ala.
Viking Pump Co., Cedar Falls, Ia.
Wagener Steam Pump Co., Canton, Ohio.
Walworth Company, 88 Pearl St., Boston, Mass.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

PUMPS, Fuel Oil

Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
Aldrich Pump Co., Foot of Pine St., Allentown, Pa.
American Fluid Motors Co., 2412-14 Aramingo Ave., Philadelphia, Pa.
American Machine & Foundry Co., 4420 Second Ave., Brooklyn, N.Y.
American Steam Pump Co., Battle Creek, Mich.
Barrett, Haentjens & Co., Pine and Buttonwood Sts., Hazleton, Pa.
Beach-Russ Co., 30 Church St., New York, N. Y.
The Bessemer Gas Engine Co., Grove City, Pa. See inside back cover.
Bethlehem Shipbuilding Corp., Bethlehem, Pa.
Blackmer Pump Co., Grand Rapids, Mich.
Briggs Weaver Machinery Co., Dallas, Texas
Buffalo Steam Pump Co., 490 Broadway, Buffalo, N. Y.
Connersville Blower Co., Connersville, Ind.
Continental Supply Co., St. Louis, Missouri
Coppus Engineering Corp., 342-348 Park Ave., Worcester, Mass.
M. T. Davidson Co., 154 Nassau St., New York, N. Y.
Dean Bros. Pump Co., Indianapolis, Ind.
Deming Co, Salem, Ohio
Fairbanks, Morse & Co., 900 S. Wabash Ave., Chicago, Ill.
Foster Pump Wks, Inc., 36 Bridge St., Brooklyn, N. Y.
Frederick Iron & Steel Co., Frederick, Md.
Furness Bros. Co., 1615 W. Walnut St., Chicago, Ill.
Gardner-Governor Co., Quincy, Ill.
Gouds Pumps, Inc., Seneca Falls, N. Y. See page 97.
Greene Brothers, Wichita Falls, Texas. See page 61.
Guild & Garrison, 463 Kent Ave., Brooklyn, N. Y.
Kinney Mfg. Co., 3529-3541 Washington St., Boston, Mass.
Lamert & Mann Co., Wood & Waknut Sts., Chicago, Ill.
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.
Maxon Premix Burner Co., Muncie, Ind.
May Machinery Co., Second National Bank Bldg., Houston, Tex.
John H. McGown Co., 910 4th Natl. Bk. Bldg., Cincinnati, Ohio
National Airoil Burner Co., 9th and Thompson Sts., Philadelphia, Pa. See page 20.
National Supply Co., Toledo, Ohio
National Transit Pump & Machine Co., Oil City, Pa.
North American Mfg. Co., 8918 Frederick Ave., Cleveland, Ohio.
Peabody Engineering Corp., 110 E. Forty Second St., New York, N. Y.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Pittsburgh Machine Tool Co., Corry Ave., Braddock, Pa.
Richmond Engineering Co. 935 Brook Ave., Box 514, Richmond, Va.
The P. H. & F. M. Roots Co., Connersville, Ind. See inside front cover.
Geo. D. Roper Corp., Rockford, Ill.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Scranton Pump Co., Scranton, Pa.
Southern Engine & Pump Co., Houston, Texas
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
St. Louis Pump & Equipment Co., St. Louis, Mo.
Tennant Co., Union National Bank Bldg., Houston, Texas.
Twinvolute Pump & Mfg. Co., 216 High St., Newark, N. J.
Viking Pump Co., Cedar Falls, Ia.
Vogt Brothers Mfg. Co., 1402 W. Main St., Louisville, Ky.
Wagener Steam Pump Co., Canton, Ohio.
Westco-Chippewa Pump Co., Davenport, Iowa.
Wilgus Mfg. Co., 1732 E. Sixteenth St., Los Angeles, Calif.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

PUMPS, Gear

Schutte & Koerting Co., 1165 Thompson St., Philadelphia, Pa. See page 149.

PUMPS, High Pressure Still

Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
Aldrich Pump Co., Foot of Pine St., Allentown, Pa.
American Steam Pump Co., Battle Creek, Mich.
Blackmer Pump Co., Grand Rapids, Mich.
Briggs Weaver Machinery Co., Dallas, Texas
Buffalo Steam Pump Co., 490 Broadway, Buffalo, N. Y.
Columbus Steam Pump Works Co., 85 W. Broad St., Columbus, O.
Continental Supply Co., St. Louis, Missouri
M. T. Davidson Co., 154 Nassau St., New York, N. Y.
Dean Bros. Pump Co., Indianapolis, Ind.
Fairbanks, Morse & Co., 900 S. Wabash Ave., Chicago, Ill.
Goulds Pumps Inc., Seneca Falls. N. Y. See page 97.
Guild & Garrison, 463 Kent Ave., Brooklyn, N. Y.
Kinney Mfg. Co., 3529-3541 Washington St., Boston, Mass.
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.
May Machinery Co., Second National Bank Bldg., Houston, Tex.
John H. McGown Co., 910 4th Natl. Bk. Bldg., Cincinnati, Ohio
National Steam Pump Wks., Upper Sandusky, Ohio
National Supply Co., Toledo, Ohio
National Transit Pump & Machine Co., Oil City, Pa.
The P. H. & F. M. Roots Co., Connersville, Ind. See inside front cover.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Southern Engine & Pump Co., Houston, Texas
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Tennant Co., Union National Bank Bldg., Houston, Texas.
Twinvolute Pump & Mfg. Co., 216 High St., Newark, N. J.
Vogt Brothers Mfg. Co., 1402 W. Main St., Louisville, Ky.
Wagener Steam Pump Co., Canton, Ohio.
Wilson-Snyder Manufacturing Co., Pittsburg, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

PUMPS, Hot Oil

Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
Aldrich Pump Co., Foot of Pine St., Allentown, Pa.
American Steam Pump Co., Battle Creek, Mich.
Beach-Russ Co., 30 Church St., New York, N. Y.
Blackmer Pump Co., Grand Rapids, Mich.
Blake Pump Co., Fitchburg, Mass.
Briggs Weaver Machinery Co., Dallas, Texas
Buffalo Steam Pump Co., 490 Broadway, Buffalo, N. Y.
Columbus Steam Pump Works Co., 85 W. Broad St., Columbus, O.
Connersville Blower Co., Connersville, Ind.
Continental Supply Co., St. Louis, Missouri
Coppus Engineering Corp., 342-348 Park Ave., Worcester, Mass.
M. T. Davidson Co., 154 Nassau St., New York, N. Y.
Dean Bros. Pump Co., Indianapolis, Ind.
Deming Co., Salem, Ohio.
J. P. Devine Co., 1380 Clinton, Buffalo, N. Y.
Economy Pumping Machinery Co., 104-18 N. Curtis St., Chicago, Ill.
Fairbanks, Morse & Co., 900 S. Wabash Ave., Chicago, Ill.
Foster Pump Wks, Inc., 36 Bridge St., Brooklyn, N. Y.
Frederick Iron & Steel Co., Frederick, Md.
Gardner-Governor Co., Quincy, Ill.
Goulds Pumps, Inc., Seneca Falls. N. Y. See page 97.
Greene Brothers, Wichita Falls, Texas. See page 61.
Guild & Garrison, 463 Kent Ave., Brooklyn, N. Y.
Kinney Mfg. Co., 3529-3541 Washington St., Boston, Mass.
Lamert & Mann Co., Wood & Waknut Sts., Chicago, Ill.
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.
May Machinery Co., Second National Bank Bldg., Houston, Tex.
John H. McGown Co., 910 4th Natl. Bk. Bldg., Cincinnati, Ohio
National Steam Pump Wks., Upper Sandusky, Ohio
National Supply Co., Toledo, Ohio
National Transit Pump & Machine Co., Oil City, Pa.
The P. H. & F. M. Roots Co., Connersville, Ind. See inside front cover.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Southern Engine & Pump Co., Houston, Texas
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
St. Louis Pump & Equipment Co., St. Louis, Mo.
Tennant Co., Union National Bank Bldg., Houston, Texas.
Twinvolute Pump & Mfg. Co., 216 High St., Newark, N. J.
Viking Pump Co., Cedar Falls, Ia.
Vogt Brothers Mfg. Co., 1402 W. Main St., Louisville, Ky.
Wagener Steam Pump Co., Canton, Ohio.
Westco-Chippewa Pump Co., Davenport, Iowa.
Wilson-Snyder Manufacturing Co., Pittsburg, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

PUMPS, Hydraulic

Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
Aldrich Pump Co., Foot of Pine St., Allentown, Pa.
American Fluid Motors Co., 2412-14 Aramingo Ave., Philadelphia, Pa.
American Steam Pump Co., Battle Creek, Mich.
Austin-Mason Co., 15 Park Row, New York, N. Y.
Bethlehem Shipbuilding Corp., Bethlehem, Pa.
Blake Pump Co., Fitchburg, Mass.
Briggs Weaver Machinery Co., Dallas, Texas
Buffalo Steam Pump Co., 490 Broadway, Buffalo, N. Y.
The Burroughs Co., 246 N. Tenth St., Newark, N. J.
Columbus Steam Pump Works Co., 85 W. Broad St., Columbus, O.
Continental Supply Co., St. Louis, Missouri
M. T. Davidson Co., 154 Nassau St., New York, N. Y.
De Laval Steam Turbine Co., Trenton, N. J. See page 123.
Dean Bros. Pump Co., Indianapolis, Ind.
Deming Co, Salem, Ohio
Richard Dudgeon, Inc., New York, N. Y.
Fairbanks, Morse & Co., 900 S. Wabash Ave., Chicago, Ill.
Goulds Pumps, Inc., Seneca Falls. N. Y. See page 97.
Guild & Garrison, 463 Kent Ave., Brooklyn, N. Y.

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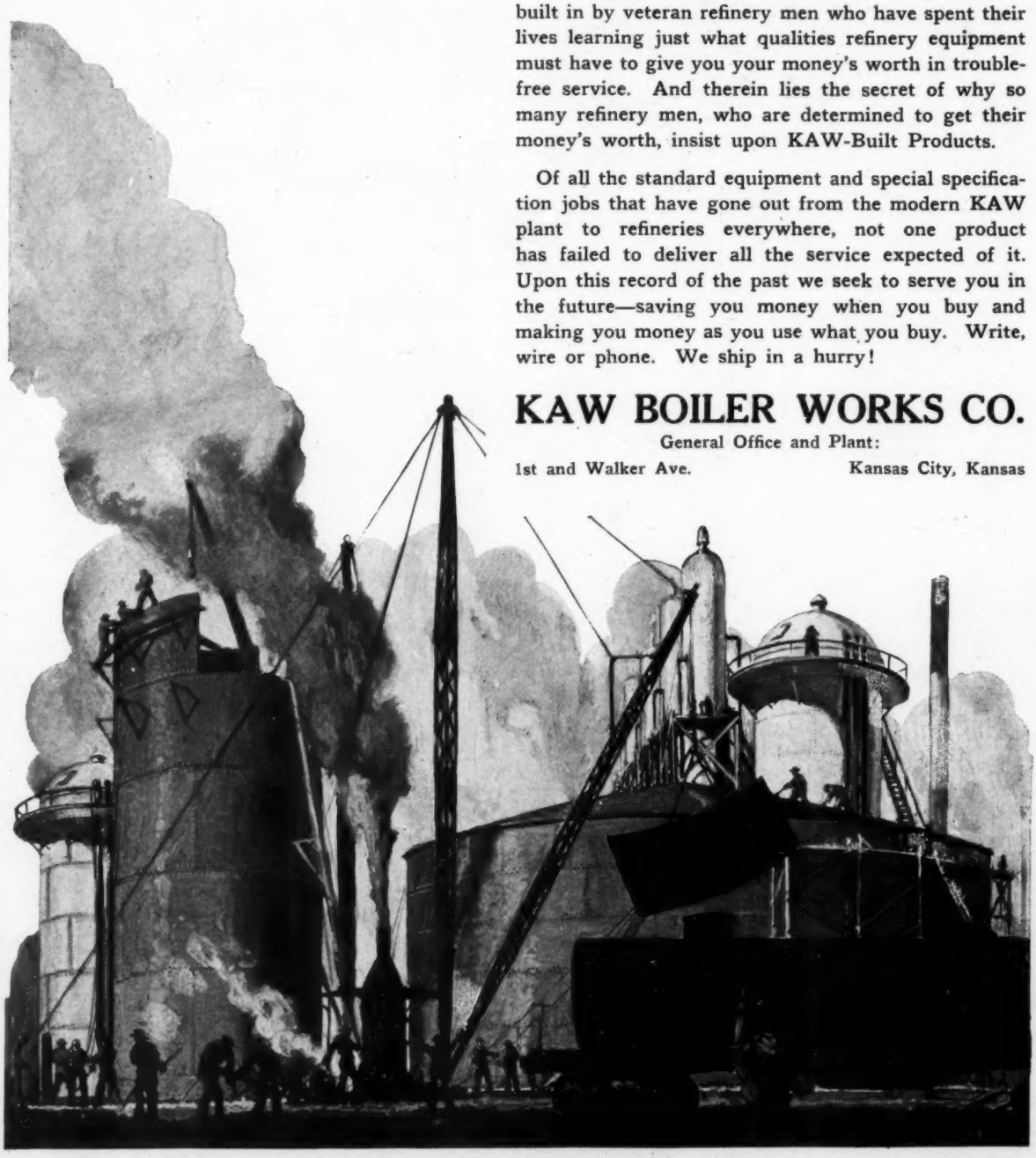


Gardner-Governor Co., Quincy, Ill.
A. L. Henderer's Sons, Maryland Ave., & Beech St., Wilmington, Dela. See page 143.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Hydraulic Press Mfg. Co., Mt. Gilead, Ohio.
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.
May Machinery Co., Second National Bank Bldg., Houston, Tex.
John H. McGown Co., 910 4th Natl. Bk. Bldg., Cincinnati, Ohio
National Steam Pump Wks., Upper Sandusky, Ohio
National Supply Co., Toledo, Ohio
Peden Iron & Steel Co., Houston, Texas. See page 85.
Pittsburgh Machine Tool Co., Corry Ave., Braddock, Pa.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Southern Engine & Pump Co., Houston, Texas
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Tennant Co., Union National Bank Bldg., Houston, Texas.
Twinvolute Pump & Mfg. Co., 216 High St., Newark, N. J.
Vogt Brothers Mfg. Co., 1402 W. Main St., Louisville, Ky.
Wagener Steam Pump Co., Canton, Ohio.
Walworth Company, 88 Pearl St., Boston, Mass.
Wilson-Snyder Manufacturing Co., Pittsburgh, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

PUMPS, Lead Acid

American Steam Pump Co., Battle Creek, Mich.
The American Well Works, Aurora, Illinois.
Austin-Mason Co., 15 Park Row, New York, N. Y.
Beach-Russ Co., 30 Church St., New York, N. Y.
Buffalo Steam Pump Co., 490 Broadway, Buffalo, N. Y.
De Laval Steam Turbine Co., Trenton, N. J. See page 123.
Fairbanks, Morse & Co., 900 S. Wabash Ave., Chicago Ill.
Lamert & Mann Co., Wood & Waknut Sts., Chicago, Ill.
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.
May Machinery Co., Second National Bank Bldg., Houston, Tex.
John H. McGown Co., 910 4th Natl. Bk. Bldg., Cincinnati, Ohio
Moloch Co., Kaukauna, Wis.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Southern Engine & Pump Co., Houston, Texas
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Twinvolute Pump & Mfg. Co., 216 High St., Newark, N. J.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

PUMPS, Oil

Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
Aldrich Pump Co., Foot of Pine St., Allentown, Pa.
American Machine & Foundry Co., 4420 Second Ave., Brooklyn, N.Y.
American Steam Pump Co., Battle Creek, Mich.
The American Well Works, Aurora, Illinois.
Austin-Mason Co., 15 Park Row, New York, N. Y.
Barrett, Haentjens & Co., Pine and Buttonwood Sts., Hazleton, Pa.
Beach-Russ Co., 30 Church St., New York, N. Y.
W. N. Best Furnace & Burner Corp., 11 Broadway, New York, New York.
Bethlehem Shipbuilding Corp., Bethlehem, Pa.
Blackmer Pump Co., Grand Rapids, Mich.
Blake Pump Co., Fitchburg, Mass.
Briggs Weaver Machinery Co., Dallas, Texas
Buffalo Steam Pump Co., 490 Broadway, Buffalo, N. Y.
Butler Mfg. Co., 1124 Grand Ave., Kansas City, Mo.
Columbus Steam Pump Co., 85 W. Broad St., Columbus, Ohio.
Connersville Blower Co., Connersville, Ind.
Continental Supply Co., St. Louis, Missouri
M. T. Davidson Co., 154 Nassau St., New York, N. Y.
De Laval Steam Turbine Co., Trenton, N. J. See page 123.
Dean Bros. Pump Co., Indianapolis, Ind.
Deming Co, Salem, Ohio
Detroit Lubricator Co., 5938 Trumbull Ave., Detroit, Mich.
J. P. Devine Co., 1380 Clinton, Buffalo, N. Y.
Essex Brass Corp., 2000 Franklin St., Detroit, Mich.
Fairbanks, Morse & Co., 900 S. Wabash Ave., Chicago, Ill.
Foster Pump Wks, Inc., 36 Bridge St., Brooklyn, N. Y.
Frederick Iron & Steel Co., Frederick, Md.
Goulds Pumps, Inc., Seneca Falls, N. Y. See page 97.
Greene Brothers, Wichita Falls, Texas. See page 61.
Guild & Garrison, 463 Kent Ave., Brooklyn, N. Y.
Ingersoll-Rand Co., 11 Broadway, New York, N. Y.
M. W. Jamieson & Co., 1309 Fourth Ave., Warren, Pa.
Kinney Mfg. Co., 3529-3541 Washington St., Boston, Mass.
Lamert & Mann Co., Wood & Waknut Sts., Chicago, Ill.
Le Courteney Co., 4 Maine, Newark, N. J.
May Machinery Co., Second National Bank Bldg., Houston, Tex.
McCullough Mfg. Co., 2632-34 Central Ave., Minneapolis, Minn.
John H. McGown Co., 910 4th Natl. Bk. Bldg., Cincinnati, Ohio
National Steam Pump Wks., Upper Sandusky, Ohio
National Supply Co., Toledo, Ohio
National Transit Pump & Machine Co., Oil City, Pa.
North American Mfg. Co., 8918 Frederick Ave., Cleveland, Ohio.
Wm. W. Nugent & Co., 410-412 No. Hermitage Ave., Chicago, Ill.
Oil Well Supply Co., Pittsburgh, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Pittsburgh Machine Tool Co., Corry Ave., Braddock, Pa.
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
The P. H. & F. M. Roots Co., Connersville, Ind. See inside front cover.
Geo. D. Roper Corp., Rockford, Ill.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Scranton Pump Co., Scranton, Pa.
Southern Engine & Pump Co., Houston, Texas
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
St. Louis Pump & Equipment Co., St. Louis, Mo.
Tennant Co., Union National Bank Bldg., Houston, Texas.
Twinvolute Pump & Mfg. Co., 216 High St., Newark, N. J.
Viking Pump Co., Cedar Falls, Ia.
Vogt Brothers Mfg. Co., 1402 W. Main St., Louisville, Ky.
Wagener Steam Pump Co., Canton, Ohio.
Walworth Company, 88 Pearl St., Boston, Mass.
Westco-Chippewa Pump Co., Davenport, Iowa.
Wilson-Snyder Manufacturing Co., Pittsburgh, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

PUMPS, Parts, Boiler Feed

Gulf Coast Machine & Supply Co., Beaumont, Texas.

PUMPS, Parts, Pipe Line

Gulf Coast Machine & Supply Co., Beaumont, Texas.

PUMPS, Pipe Line

Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
Aldrich Pump Co., Foot of Pine St., Allentown, Pa.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Austin-Mason Co., 15 Park Row, New York, N. Y.
Beach-Russ Co., 30 Church St., New York, N. Y.
Bethlehem Shipbuilding Corp., Bethlehem, Pa.
Blake Pump Co., Fitchburg, Mass.
Briggs Weaver Machinery Co., Dallas, Texas
Buffalo Steam Pump Co., 490 Broadway, Buffalo, N. Y.
Columbus Steam Pump Works Co., 85 W. Broad St., Columbus, O.
Continental Supply Co., St. Louis, Missouri
Dean Bros. Pump Co., Indianapolis, Ind.
Deming Co, Salem, Ohio
Domestic Engine & Pump Co., Shippensburg, Pa.
Fairbanks, Morse & Co., 900 S. Wabash Ave., Chicago, Ill.
Gardner-Governor Co., Quincy, Ill.
Goulds Pumps, Inc., Seneca Falls, N. Y. See page 97.
Guild & Garrison, 463 Kent Ave., Brooklyn, N. Y.
M. W. Jamieson & Co., 1309 Fourth Ave., Warren, Pa.
Le Courteney Co., 4 Maine, Newark, N. J.
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.
May Machinery Co., Second National Bank Bldg., Houston, Tex.
John H. McGown Co., 910 4th Natl. Bk. Bldg., Cincinnati, Ohio
National Supply Co., Toledo, Ohio
National Transit Pump & Machine Co., Oil City, Pa.
Oil Well Supply Co., Pittsburgh, Pa.
Pittsburgh Machine Tool Co., Corry Ave., Braddock, Pa.
Geo. D. Roper Corp., Rockford, Ill.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Twinvolute Pump & Mfg. Co., 216 High St., Newark, N. J.
Wagener Steam Pump Co., Canton, Ohio.
Wilson-Snyder Manufacturing Co., Pittsburgh, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

PUMPS, Power

Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
Aldrich Pump Co., Foot of Pine St., Allentown, Pa.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
American Machine & Foundry Co., 4420 Second Ave., Brooklyn, N.Y.
American Steam Pump Co., Battle Creek, Mich.
Babcock-Wilcox and Goldie-McCulloch, Ltd., Galt, Ontario, Canada
Beach-Russ Co., 30 Church St., New York, N. Y.
The Bessemer Gas Engine Co., Grove City, Pa. See inside book cover.
Bethlehem Shipbuilding Corp., Bethlehem, Pa.
Blake Pump Co., Fitchburg, Mass.
Briggs Weaver Machinery Co., Dallas, Texas
Buffalo Steam Pump Co., 490 Broadway, Buffalo, N. Y.
Butler Mfg. Co., 1124 Grand Ave., Kansas City, Mo.
Columbus Steam Pump Works Co., 85 W. Broad St., Columbus, O.
Connersville Blower Co., Connersville, Ind.
Continental Supply Co., St. Louis, Missouri
Dean Bros. Pump Co., Indianapolis, Ind.
Deming Co, Salem, Ohio
Domestic Engine & Pump Co., Shippensburg, Pa.
R. B. Everett Co., Houston, Texas
Fairbanks, Morse & Co., 900 S. Wabash Ave., Chicago, Ill.
Foster Pump Wks, Inc., 36 Bridge St., Brooklyn, N. Y.
Gardner-Governor Co., Quincy, Ill.
F. W. Gartner Co., Houston, Texas.
Goulds Pumps, Inc., Seneca Falls, N. Y. See page 97.
Guild & Garrison, 463 Kent Ave., Brooklyn, N. Y.
Hercules Supply Co., Corsicana, Texas
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Ingersoll-Rand Co., 11 Broadway, New York, N. Y.
Kinney Mfg. Co., 3529-3541 Washington St., Boston, Mass.
Langstadt-Meyer Co., Appleton, Wis.
Le Courteney Co., 4 Maine, Newark, N. J.
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.
May Machinery Co., Second National Bank Bldg., Houston, Tex.
John H. McGown Co., 910 4th Natl. Bk. Bldg., Cincinnati, Ohio
National Supply Co., Toledo, Ohio
National Transit Pump & Machine Co., Oil City, Pa.
Oil Well Supply Co., Pittsburgh, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Pittsburgh Machine Tool Co., Corry Ave., Braddock, Pa.
The P. H. & F. M. Roots Co., Connersville, Ind. See inside front cover.
Geo. D. Roper Corp., Rockford, Ill.
Geo. D. Roper Corp., Rockford, Ill.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Scranton Pump Co., Scranton, Pa.
Southern Engine & Pump Co., Houston, Texas
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Tennant Co., Union National Bank Bldg., Houston, Texas.
Twinvolute Pump & Mfg. Co., 216 High St., Newark, N. J.
Viking Pump Co., Cedar Falls, Ia.
Wilson-Snyder Manufacturing Co., Pittsbugh, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

PUMPS, Rotary

Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
American Machine & Foundry Co., 4420 Second Ave., Brooklyn, N.Y.
Beach-Russ Co., 30 Church St., New York, N. Y.
Blackmer Pump Co., Grand Rapids, Mich.
Briggs Weaver Machinery Co., Dallas, Texas
Butler Mfg. Co., 1124 Grand Ave., Kansas City, Mo.
Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
Connersville Blower Co., Connersville, Ind.
Continental Supply Co., St. Louis, Missouri
Crowell Mfg. Co., 315 Franklin Ave., Brooklyn, N. Y.
M. T. Davidson Co., 154 Nassau St., New York, N. Y.
Deming Co, Salem, Ohio
J. P. Devine Co., 1380 Clinton, Buffalo, N. Y.
Eclipse Fuel Engineering Co., Rockford, Ill.
Fairbanks, Morse & Co., 900 S. Wabash Ave., Chicago, Ill.
Foster Pump Wks, Inc., 36 Bridge St., Brooklyn, N. Y.
Goulds Pumps, Inc., Seneca Falls, N. Y. See page 97.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Kruger & Blind Co., 513 Master St., Philadelphia, Pa.
Lamert & Mann Co., Wood & Waknut Sts., Chicago, Ill.
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.
John H. McGown Co., 910 4th Natl. Bk. Bldg., Cincinnati, Ohio
National Supply Co., Toledo, Ohio
Wm. W. Nugent & Co., 410-412 No. Hermitage Ave., Chicago, Ill.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Pittsburgh Machine Tool Co., Corry Ave., Braddock, Pa.
The P. H. & F. M. Roots Co., Connersville, Ind. See inside front cover.
Geo. D. Roper Corp., Rockford, Ill.

The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Southern Engine & Pump Co., Houston, Texas
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
St. Louis Pump & Equipment Co., St. Louis, Mo.
Twinvolute Pump & Mfg. Co., 216 High St., Newark, N. J.
Viking Pump Co., Cedar Falls, Ia.
Westco-Chippewa Pump Co., Davenport, Iowa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

PUMPS, Rotary Air

Kruger & Blind Co., 513 Master St., Philadelphia, Pa.

PUMPS, Rotary, Motor Driver

Foster Pump Wks, Inc., 36 Bridge St., Brooklyn, N. Y.

PUMPS, Rotary Vacuum

Crowell Mfg. Co., 315 Franklin Ave., Brooklyn, N. Y.
Kruger & Blind Co., 513 Master St., Philadelphia, Pa.

PUMPS, Screw

The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.

PUMPS, Simplex

Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
Aldrich Pump Co., Foot of Pine St., Allentown, Pa.
American Steam Pump Co., Battle Creek, Mich.
Blakeslee Mfg. Co., Du Quoin, Ill.
Briggs Weaver Machinery Co., Dallas, Texas
Columbus Steam Pump Works Co., 85 W. Broad St., Columbus, O.
Connersville Blower Co., Connersville, Ind.
Dean Bros. Pump Co., Indianapolis, Ind.
J. P. Devine Co., 1380 Clinton, Buffalo, N. Y.
Domestic Engine & Pump Co., Shippensburg, Pa.
Fairbanks, Morse & Co., 900 S. Wabash Ave., Chicago, Ill.
Foster Pump Wks, Inc., 36 Bridge St., Brooklyn, N. Y.
Furness Bros. Co., 1615 W. Walnut St., Chicago, Ill.
Guild & Garrison, 463 Kent Ave., Brooklyn, N. Y.
Ingersoll-Rand Co., 11 Broadway, New York, N. Y.
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.
May Machinery Co., Second National Bank Bldg., Houston, Tex.
John H. McGown Co., 910 4th Natl. Bk. Bldg., Cincinnati, Ohio
National Steam Pump Wks., Upper Sandusky, Ohio
National Supply Co., Toledo, Ohio
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Southern Engine & Pump Co., Houston, Texas
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Tennant Co., Union National Bank Bldg., Houston, Texas.
Twinvolute Pump & Mfg. Co., 216 High St., Newark, N. J.
Vogt Brothers Mfg. Co., 1402 W. Main St., Louisville, Ky.
Wagener Steam Pump Co., Canton, Ohio.
Wilson-Snyder Manufacturing Co., Pittsburgh, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

PUMPS Single Cylinder Steam

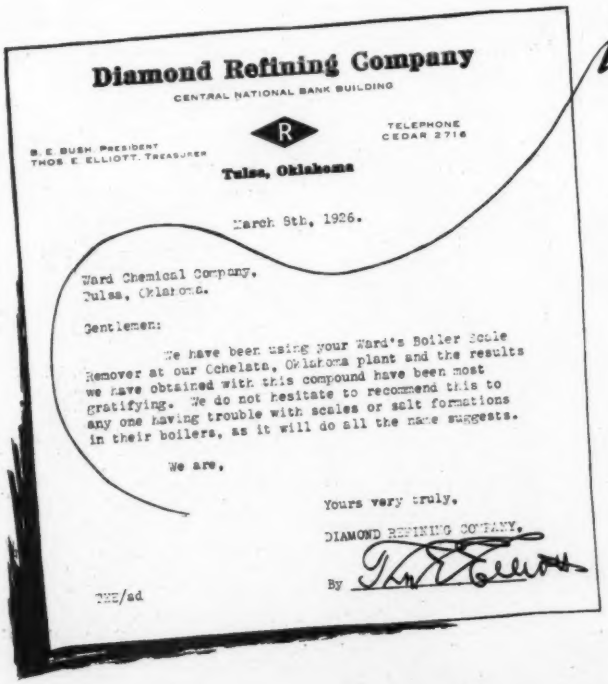
Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
American Steam Pump Co., Battle Creek, Mich.
Austin-Mason Co., 15 Park Row, New York, N. Y.
Blakeslee Mfg. Co., Du Quoin, Ill.
Briggs Weaver Machinery Co., Dallas, Texas
Columbus Steam Pump Works Co., 85 W. Broad St., Columbus, O.
M. T. Davidson Co., 154 Nassau St., New York, N. Y.
Dean Bros. Pump Co., Indianapolis, Ind.
J. P. Devine Co., 1380 Clinton, Buffalo, N. Y.
Fairbanks, Morse & Co., 900 S. Wabash Ave., Chicago, Ill.
Foster Pump Wks, Inc., 36 Bridge St., Brooklyn, N. Y.
Furness Bros. Co., 1615 W. Walnut St., Chicago, Ill.
Guild & Garrison, 463 Kent Ave., Brooklyn, N. Y.
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.
May Machinery Co., Second National Bank Bldg., Houston, Tex.
John H. McGown Co., 910 4th Natl. Bk. Bldg., Cincinnati, Ohio
National Supply Co., Toledo, Ohio
National Transit Pump & Machine Co., Oil City, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Scranton Pump Co., Scranton, Pa.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Southern Engine & Pump Co., Houston, Texas
Tennant Co., Union National Bank Bldg., Houston, Texas.
Twinvolute Pump & Mfg. Co., 216 High St., Newark, N. J.
Vogt Brothers Mfg. Co., 1402 W. Main St., Louisville, Ky.
Wagener Steam Pump Co., Canton, Ohio.
Wilson-Snyder Manufacturing Co., Pittsburgh, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

PUMPS, Sludge

Aldrich Pump Co., Foot of Pine St., Allentown, Pa.
American Steam Pump Co., Battle Creek, Mich.
The American Well Works, Aurora, Illinois.
Babcock-Wilcox and Goldie-McCulloch, Ltd., Galt, Ontario, Canada
Briggs Weaver Machinery Co., Dallas, Texas
Buffalo Steam Pump Co., 490 Broadway, Buffalo, N. Y.
Columbus Steam Pump Works Co., 85 W. Broad St., Columbus, O.
Dean Bros. Pump Co., Indianapolis, Ind.
Deming Co, Salem, Ohio
Domestic Engine & Pump Co., Shippensburg, Pa.
Fairbanks, Morse & Co., 900 S. Wabash Ave., Chicago, Ill.
Gardner-Governor Co., Quincy, Ill.
Goulds Pumps, Inc., Seneca Falls, N. Y. See page 97.
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.
May Machinery Co., Second National Bank Bldg., Houston, Tex.
John H. McGown Co., 910 4th Natl. Bk. Bldg., Cincinnati, Ohio
National Supply Co., Toledo, Ohio
Oil Well Supply Co., Pittsburgh, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Shartle Bros. Machine Co., Middletown, Ohio.
Tennant Co., Union National Bank Bldg., Houston, Texas.
Titusville Iron Works, Titusville, Pa.
Twinvolute Pump & Mfg. Co., 216 High St., Newark, N. J.
Viking Pump Co., Cedar Falls, Ia.
Wagener Steam Pump Co., Canton, Ohio.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

PUMPS, Steam

Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
American Steam Pump Co., Battle Creek, Mich.
Austin-Mason Co., 15 Park Row, New York, N. Y.
Babcock-Wilcox and Goldie-McCulloch, Ltd., Galt, Ontario, Canada
Bethlehem Shipbuilding Corp., Bethlehem, Pa.
Briggs Weaver Machinery Co., Dallas, Texas
Buffalo Steam Pump Co., 490 Broadway, Buffalo, N. Y.
Columbus Steam Pump Works Co., 85 W. Broad St., Columbus, O.
Continental Supply Co., St. Louis, Missouri
M. T. Davidson Co., 154 Nassau St., New York, N. Y.
Dean Bros. Pump Co., Indianapolis, Ind.
J. P. Devine Co., 1380 Clinton, Buffalo, N. Y.
R. B. Everett Co., Houston, Texas
Fairbanks, Morse & Co., 900 S. Wabash Ave., Chicago, Ill.
Foster Pump Wks, Inc., 36 Bridge St., Brooklyn, N. Y.
Furness Bros. Co., 1615 W. Walnut St., Chicago, Ill.
Gardner-Governor Co., Quincy, Ill.
F. W. Gartner Co., Houston, Texas.
A. D. Granger Co., 15 Park Row, New York, N. Y.
Guild & Garrison, 463 Kent Ave., Brooklyn, N. Y.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.


Diamond Refining Company
CENTRAL NATIONAL BANK BUILDING
R
TELEPHONE CEDAR 2716
S. E. BUSH PRESIDENT
THOS. E. ELLIOTT, TREASURER
Tulsa, Oklahoma

March 8th, 1926.

Ward Chemical Company,
Tulsa, Oklahoma.

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Yours very truly,

DIAMOND REFINING COMPANY,

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it will do All *its name suggests —*

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WARD CHEMICAL CO.

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M. W. Jamieson & Co., 1309 Fourth Ave., Warren, Pa.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
May Machinery Co., Second National Bank Bldg., Houston, Tex.
John H. McGown Co., 910 4th Natl. Bk. Bldg., Cincinnati, Ohio
National Steam Pump Wks., Upper Sandusky, Ohio
National Supply Co., Toledo, Ohio
National Transit Pump & Machine Co., Oil City, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Scranton Pump Co., Scranton, Pa.
Southern Engine & Pump Co., Houston, Texas
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Tennant Co., Union National Bank Bldg., Houston, Texas.
Twinvolute Pump & Mfg. Co., 216 High St., Newark, N. J.
Union Iron Works, Selma, Ala.
Vogt Brothers Mfg. Co., 1402 W. Main St., Louisville, Ky.
Wagener Steam Pump Co., Canton, Ohio.
Western Iron & Foundry Co., Wichita, Kansas. See page 89.
Wilson-Snyder Manufacturing Co., Pittsburgh, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

PUMPS, Steam Jacketed

Geo. D. Roper Corp., Rockford, Ill.

PUMPS, Stripping

American Steam Pump Co., Battle Creek, Mich.
Deming Co, Salem, Ohio
Gardner-Governor Co., Quincy, Ill.
Goulds Pumps, Inc., Seneca Falls, N. Y. See page 97.
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.
May Machinery Co., Second National Bank Bldg., Houston, Tex.
John H. McGown Co., 910 4th Natl. Bk. Bldg., Cincinnati, Ohio
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St Louis, Mo.
Twinvolute Pump Mfg. Co., 216 High St., Newark, N. J.
Vogt Brothers Mfg. Co., 1402 W. Main St., Louisville, Ky.
Wagener Steam Pump Co., Canton, Ohio.
Wilson-Snyder Manufacturing Co., Pittsburgh, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

PUMPS, Tank

Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
Aldrich Pump Co., Foot of Pine St., Allentown, Pa.
American Steam Pump Co., Battle Creek, Mich.
Austin-Mason Co., 15 Park Row, New York, N. Y.
Beach-Russ Co., 30 Church St., New York, N. Y.
Blackmer Pump Co., Grand Rapids, Mich.
Blakeslee Mfg. Co., Du Quoin, Ill.
Briggs Weaver Machinery Co., Dallas, Texas
Buffalo Steam Pump Co., 490 Broadway, Buffalo, N. Y.
Butler Mfg. Co., 1124 Grand Ave., Kansas City, Mo.
Columbus Steam Pump Works Co., 85 W. Broad St., Columbus, O.
Continental Supply Co., St. Louis, Missouri
M. T. Davidson Co., 154 Nassau St., New York, N. Y.
De Laval Steam Turbine Co., Trenton, N. J. See page 123.
Dean Bros. Pump Co., Indianapolis, Ind.
Deming Co, Salem, Ohio
Economy Pumping Machinery Co., 104-18 N. Curtis St., Chicago, Ill.
Fairbanks, Morse & Co., 900 S. Wabash Ave., Chicago, Ill.
Foster Pump Wks, Inc., 36 Bridge St., Brooklyn, N. Y.
Furness Bros. Co., 1615 W. Walnut St., Chicago, Ill.
Gardner-Governor Co., Quincy, Ill.
Gilbert & Barker Mfg. Co., Springfield, Mass.
Goulds Pumps, Inc., Seneca Falls, N. Y. See page 97.
Greene Brothers, Wichita Falls, Texas. See page 61.
Guild & Garrison, 463 Kent Ave., Brooklyn, N. Y.
Kinney Mfg. Co., 3529-3541 Washington St., Boston, Mass.
Le Courtenay Co., 4 Maine, Newark, N. J.
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.
May Machinery Co., Second National Bank Bldg., Houston, Tex.
John H. McGown Co., 910 4th Natl. Bk. Bldg., Cincinnati, Ohio
National Steam Pump Wks., Upper Sandusky, Ohio
National Supply Co., Toledo, Ohio
National Transit Pump & Machine Co., Oil City, Pa.
Wm. W. Nugent & Co., 410-412 No. Hermitage Ave., Chicago, Ill.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Geo. D. Roper Corp., Rockford, Ill.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Scranton Pump Co., Scranton, Pa.
Sexton Can Company, Inc., 123 Broad St., Boston, Mass.
Southern Engine & Pump Co., Houston, Texas
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Twinvolute Pump & Mfg. Co., 216 High St., Newark, N. J.
Viking Pump Co., Cedar Falls, Ia.
Vogt Brothers Mfg. Co., 1402 W Main St., Louisville, Ky.
Wagener Steam Pump Co., Canton, Ohio.
Westco-Chippewa Pump Co., Davenport, Iowa.
Wilson-Snyder Manufacturing Co., Pittsburgh, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

PUMPS, Transfer

Moncrief-Lenoir Mfg. Co., Houston, Texas

PUMPS, Turbine

Aldrich Pump Co., Foot of Pine St., Allentown, Pa.
American Steam Pump Co., Battle Creek, Mich.
The American Well Works, Aurora, Illinois.
Babcock-Wilcox and Goldie-McCulloch, Ltd., Galt, Ontario, Canada
Barrett, Haentjens & Co., Pine and Buttonwood Sts., Hazleton, Pa.
Buffalo Steam Pump Co., 490 Broadway, Buffalo, N. Y.
De Laval Steam Turbine Co., Trenton, N. J. See page 123.
Frederick Iron & Steel Co., Frederick, Md.
Goulds Pumps, Inc., Seneca Falls, N. Y. See page 97.
Ingersoll-Rand Co., 11 Broadway, New York, N. Y.
Byron Jackson Pump Mfg. Co., Inc., S. San Pedro St., Los Angeles, Calif.
Le Courtenay Co., 4 Maine, Newark, N. J.
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.
May Machinery Co., Second National Bank Bldg., Houston, Tex.
John H. McGown Co., 910 4th Natl. Bk. Bldg., Cincinnati, Ohio
Peden Iron & Steel Co., Houston, Texas. See page 85.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Scranton Pump Co., Scranton, Pa.
Southern Engine & Pump Co., Houston, Texas
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Tennant Co., Union National Bank Bldg. Houston, Texas.
Terry Steam Turbine Co., Hartford, Conn.
Twinvolute Pump & Mfg. Co., 216 High St., Newark, N. J.
Westco-Chippewa Pump Co., Davenport, Iowa.
Wilson-Snyder Manufacturing Co., Pittsburgh, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

PUMPS, Vacuum

Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
Allen & Billmyre Co., Inc., Grand Central Palace, New York City, N. Y.
American Machine & Foundry Co., 4420 Second Ave., Brooklyn, N.Y.
American Steam Pump Co., Battle Creek, Mich.
Austin-Mason Co., 15 Park Row, New York, N. Y.
Babcock-Wilcox and Goldie-McCulloch, Ltd., Galt, Ontario, Canada
Barrett, Haentjens & Co., Pine and Buttonwood Sts., Hazleton, Pa.
Beach-Russ Co., 30 Church St., New York, N. Y.
The Bessemer Gas Engine Co., Grove City, Pa. See inside back cover.
Briggs Weaver Machinery Co., Dallas, Texas
Buffalo Steam Pump Co., 490 Broadway, Buffalo, N. Y.
Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
Chicago Pneumatic Tool Co., 6 E. 44th St., New York, N. Y.
Columbus Steam Pump Works Co., 85 W. Broad St., Columbus, O.
Connersville Blower Co., Connersville, Ind.
Continental Supply Co., St. Louis, Missouri
Croll-Reynolds Eng'rg. Co., Inc., 95 Liberty St., New York, N. Y.
M. T. Davidson Co., 154 Nassau St., New York, N. Y.
Dean Bros. Pump Co., Indianapolis, Ind.
J. P. Devine Co., 1380 Clinton, Buffalo, N. Y.
Economy Pumping Machinery Co., 104-18 N. Curtis St., Chicago, Ill.
Furness Bros. Co., 1615 W. Walnut St., Chicago, Ill.
Gardner-Governor Co., Quincy, Ill.
Goulds Pumps, Inc., Seneca Falls, N. Y. See page 97.
Greene Brothers, Wichita Falls, Texas. See page 61.
Guild & Garrison, 463 Kent Ave., Brooklyn, N. Y.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Ingersoll-Rand Co., 11 Broadway, New York, N. Y.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Kruger & Blind Co., 513 Master St., Philadelphia, Pa.
Lamert & Mann Co., Wood & Waknut Sts., Chicago, Ill.
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.
May Machinery Co., Second National Bank Bldg., Houston, Tex.
John H. McGown Co., 910 4th Natl. Bk. Bldg., Cincinnati, Ohio
Mesta Machine Co., Pittsburgh, Pa.
Miller Improved Gas Engine Co., Springfield, Ohio.
National Steam Pump Wks., Upper Sandusky, Ohio
National Supply Co., Toledo, Ohio
Oil Well Supply Co., Pittsburgh, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Refinery Supply Co., Tulsa, Okla. See page 44.
The P. H. & F. M. Roots Co., Connersville, Ind. See inside front cover.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Scranton Pump Co., Scranton, Pa.
Southern Engine & Pump Co., Houston, Texas
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
St. Louis Pump & Equipment Co., St. Louis, Mo.
Sullivan Machinery Co., 122 S. Michigan Ave., Chicago, Ill.
Tennant Co., Union National Bank Bldg., Houston, Texas.
Trane Co., LaCrosse, Wis.
Ave., Rochester, N. Y.
Twinvolute Pump & Mfg. Co., 216 High St., Newark, N. J.
Vogt Brothers Mfg. Co., 1402 W. Main St., Louisville, Ky.
Wagener Steam Pump Co., Canton, Ohio.
Wheeler Condenser & Engineering Corp., 149 Broadway, N. Y., N.Y
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

PUNCHES

Briggs Weaver Machinery Co., Dallas, Texas
Continental Supply Co., St. Louis, Missouri
May Machinery Co., Second National Bank Bldg., Houston, Tex.
R. S. Newbold & Son Co., Norristown, Pa.
Paragon Machine Co., 77 South Ave., Rochester, N. Y.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Joseph T. Ryerson & Sons, 2558 W. 16th St., Chicago, Ill.
Sculley Steel & Iron Co., Chicago, Ill.
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

PUNCHES, Hydraulic

Richard Dudgeon, Inc., New York, N. Y.

PUNCHES, Pneumatic

F. F. Slocomb & Co., Inc., Wilmington, Del.

PUNCHES, Screw

A. L. Henderer's Sons, Maryland Ave., & Beech St., Wilmington, Dela. See page 143.

PURIFIERS, Ammonia

American Gas Construction Co., Newton, Iowa
Baker Ice Machine Co., 3601 Evans St., Omaha, Nebr.
Carbondale Machine Co., Carbondale, Pa.
J. P. Devine Co., 1380 Clinton, Buffalo, N. Y.
Petroleum Iron Works, Sharon, Pa.
Riter-Conley Co., Oliver Bldg., Pittsburgh, Pa.
The Vilter Mfg. Co., 936 Milwaukee St., Milwaukee, Wis. See page 161.

PURIFIERS, Feed Water

Babcock-Wilcox and Goldie-McCulloch, Ltd., Galt, Ontario, Canada
Brock Engineering Co., Arcade Bldg., St. Louis, Mo.
The Cochrane Corp., 3130 N. 17th St., Philadelphia, Pa.
Dearborn Chemical Co., 310 S. Michigan Ave., Chicago, Ill.
Graver Corp., 414 Todd Ave., E. Chicago, Ind. See page 13.
Griscom-Russell Co., 285 Madison Ave., New York, N. Y. See page 133.
Hoppes Mfg. Co., 19 Larch St., Springfield, Ohio.
International Filter Co., 335 W. Twenty-Fifth Place, Chicago, Ill.
Petroleum Iron Works, Sharon, Pa.
Reisert Automatic Water Purifying Co., 23 E. 26th St. New York, N. Y.
Roberts Filter Mfg., Co., 6th and Columbia Ave., Darby, Pa.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Wm. Scaife & Sons Co., Oakmont, Pa.
Stickle Steam Specialties Co., Indianapolis, Ind.
Tennant Co., Union National Bank Bldg., Houston, Texas.
Thermal Efficiency Co., 1210 Scarritt Bldg., Kansas City, Mo. See page 113.

PURIFIERS. Oil

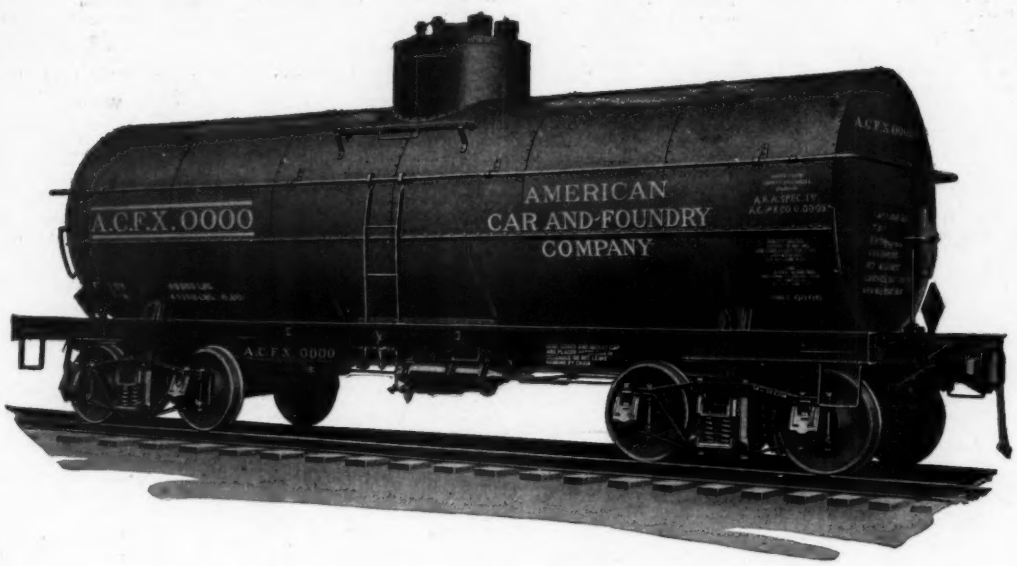
Andrews-Bradshaw Co., 530 Fourth Ave., Pittsburgh, Pa.
De Laval Separator Co., 165 Broadway, New York, N. Y.
De Laval Steam Turbine Co., Trenton, N. J. See page 123.
Greene Brothers, Wichita Falls, Texas. See page 61.
Wm. W. Nugent & Co., 410-412 No. Hermitage Ave., Chicago, Ill.
Petroleum Iron Works, Sharon, Pa.
The Sharples Specialty Co., 23rd and Westmoreland Sts., Philadelphia, Pa.

PURIFIERS, Steam

Tennant Co., Union National Bank Bldg., Houston, Texas.

PYROMETERS

American Gas Construction Co., Newton, Iowa
Briggs Weaver Machinery Co., Dallas, Texas
The Bristol Co., Waterbury, Conn. See page 154.
Brown Instrument Co., 4537 Wayne Ave., Philadelphia, Pa.
Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Defender Automatic Regulator Co., 709 Pine St., St. Louis, Mo.



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The Denver Fire Clay Co., P. O. Box 1107 Denver, Colorado
Fort Worth Laboratories, 828½ Monroe St., Ft. Worth, Texas. See page 168.
The Foxboro Co., Inc., Foxboro, Mass. See page 155.
Greene Brothers, Wichita Falls, Texas. See page 61.
Griebel Instrument Co., Carbon dale, Pa.
Hoskins Mfg. Co., 4437 Lawton Ave., Detroit, Mich.
Paul B. Huyette Co., Inc., 5 South Eighteenth St., Philadelphia, Pa.
Illinois Testing Laboratories, Inc., 141-143 W. Austin Ave., Chicago, Ill.
Leeds & Northrup Company, Philadelphia, Pa. See page 3.
Maintenance Eng. Corp., 1802 Conti St., Houston, Texas. See page 150.
Oil Well Supply Co., Pittsburgh, Pa.
Price Mfg. Co., 12369 Euclid Ave., Cleveland, Ohio.
Pyrolectric Instrument Co., Easton, Pa.
Refinery Supply Co., Tulsa, Okla. See page 44.
Republic Flow Meters Co., 2236 Diversey Parkway, Chicago, Ill.
Standard Fuel Engr'g Co., 667-687 Post Ave., So. Detroit, Mich.
Star Brass Mfg. Co., 53 Oliver St., Boston, Mass.
Taylor Instrument Co., Rochester, N. Y. See page 160.
Carl H. Wagner, 1944 W. Albany Ave., Chicago, Ill.
Western Gas Construction Co., Fort Wayne, Ind.
Williams, Brown & Earle, 918 Chestnut St., Philadelphia, Pa. See page 149
Wilson Maeulen Co., 383 Concord Ave., New York, N. Y.
Woodward, Wight & Co., Ltd. New Orleans. La. See page 153.
A. Zaubitz, 95-97 Cliff St., New York, N. Y.

PYROMETERS Recording

Briggs Weaver Machinery Co., Dallas, Texas
The Bristol Co., Waterbury, Conn. See page 154.
Brown Instrument Co., 4537 Wayne Ave., Philadelphia, Pa.
Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
Defender Automatic Regulator Co., 709 Pine St., St. Louis, Mo.
Ernest H. DuVivier, 30 Church St., New York, N. Y.
Fort Worth Laboratories, 828½ Monroe St., Ft. Worth, Texas. See page 158.
Greene Brothers, Wichita Falls, Texas. See page 61.
Griebel Instrument Co., Carbon dale, Pa.
Hoskins Mfg. Co., 4437 Lawton Ave., Detroit, Mich.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Paul B. Huyette Co., Inc., 5 South Eighteenth St., Philadelphia, Pa.
Maintenance Eng. Corp., 1802 Conti St., Houston, Texas. See page 150.
Oil Well Supply Co., Pittsburgh, Pa.
Price Mfg. Co., 12369 Euclid Ave., Cleveland, Ohio.
Refinery Supply Co., Tulsa, Okla. See page 44.
Republic Flow Meters Co., 2236 Diversey Parkway, Chicago, Ill.
Standard Fuel Engr'g Co., 667-687 Post Ave., So. Detroit, Mich.
Taylor Instrument Co., Rochester, N. Y. See page 160.
Western Gas Construction Co., Fort Wayne, Ind.
Williams, Brown & Earle, 918 Chestnut St., Philadelphia, Pa. See page 149
Wilson Maeulen Co., 383 Concord Ave., New York, N. Y.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

R

RACKS. Bar

Berger Mfg. Co., Canton, Ohio
Brazelton, Wessendorff & Nelms, Houston, Texas
Economy Engineering Co., 2635 W. Van Buren St., Chicago, Ill.
Erie City Iron Works, Erie, Pa.
Lyon Metallic Mfg. Co., Aurora, Ill.
Moloch Co., Kaukauna, Wis.
Peden Iron & Steel Co., Houston, Texas. See page 85.
United Alloy Steel Corp., Canton, Ohio.

RACKS, Barrel Storing

Economy Engineering Co., 2635 W. Van Buren St., Chicago, Ill.
Erie City Iron Works, Erie, Pa.
Lyon Metallic Mfg. Co., Aurora, Ill.
United Alloy Steel Corp., Canton, Ohio.

RACKS, Steel

Berger Mfg. Co., Canton, Ohio
Economy Engineering Co., 2635 W. Van Buren St., Chicago, Ill.
Erie City Iron Works, Erie, Pa.
Kansas City Structural Steel Co., Kansas City, Kansas.
Lyon Metallic Mfg. Co., Aurora, Ill.
Moloch Co., Kaukauna, Wis.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
United Alloy Steel Corp., Canton, Ohio.
E. Van Noorden Co., 100 Magazine St. Roxbury, Mass.

RAGS, Wiping

Houston Waste & Fibre Mills, Houston, Texas.

REAGENTS Chemical

Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
Greene Brothers, Wichita Falls, Texas. See page 61.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

RECEIVERS, Air

American Tank Co., Okla. City, Okla.
Baker Ice Machine Co., 3601 Evans St., Omaha, Nebr.
Brazelton, Wessendorff & Nelms, Houston, Texas
Butler Mfg. Co., 1124 Grand Ave., Kansas City, Mo.
Chicago Pneumatic Tool Co., 6 E. 44th St., New York, N. Y.
Chicago Steel Car Co., Chicago, Ill. See page 141.
Crowell Mfg. Co., 315 Franklin Ave., Brooklyn, N. Y.
J. P. Devine Co., 1380 Clinton, Buffalo, N. Y.
D. M. Dillon Steam Boiler Works, Fitchburg, Mass.
John Dollinger, Jr., Inc., Box 423, Beaumont, Texas
Erie City Iron Works, Erie, Pa.
Finucane Boiler Works, Houston, Texas.
Fort Worth Steel & Machinery Co., Fort Worth, Texas
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Kansas City Structural Steel Co., Kansas City, Kansas
The Kaw Boiler Works Co., Kansas City, Kansas. See page 117.
Lucas Pump & Tool Co., 427 Valley St., Dayton, Ohio
May Machinery Co., Second National Bank Bldg., Houston, Tex.
McAleenan Bros. Co., Twenty-fifth and Railroad, Pittsburgh, Pa.
Milwaukee Boiler Mfg. Co., 35th St. & National Ave., Milwaukee, Wis.
Milwaukee Reliance Boiler Works, Milwaukee, Wis.
National Supply Co., Toledo, Ohio.
Ocean Shore Iron Works, 550 Eighth St., San Francisco, Calif.
Oil Well Supply Co., Pittsburgh, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Pittsburgh Pipe Coil & Bending Co., 61 Bridge St., Etna, Pa.
Quaker City Iron Works, Richmond & Tioga Sts., Philadelphia, Pa.
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
Wm. Scaife & Sons Co., Oakmont, Pa.
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
Standard Piping & Fittings Co., 30th and Race Sts., Philadelphia, Pa.
Tennant Co., Union National Bank Bldg., Houston, Texas.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo See page 161.
Henry Vogt Machine Co., Louisville, Ky. See page 5.
Walworth Company, 88 Pearl St., Boston, Mass.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

RECORDERS, (Also see Instruments)

American Schaeffer & Budenberg Corp., Berry & S. 5th St., Brooklyn, N. Y. See page 153.
The Bristol Co., Waterbury, Conn. See page 154.
Defender Automatic Regulator Co., 709 Pine St., St. Louis, Mo.
Ernest H. DuVivier, 30 Church St., New York, N. Y.
Eclipse Fuel Engineering Co., Rockford, Ill.
The Esterline-Angus Co., P. O. Box 556, Indianapolis, Ind.
Fort Worth Laboratories, 828½ Monroe St., Ft. Worth, Texas. See page 158.
Julien P. Friez & Sons, Baltimore St. & Central Ave., Baltimore, Md.
Greene Brothers, Wichita Falls, Texas. See page 61.
W. & L. E. Gurley, Troy, N. Y.
F. J. Low Co., Inc., 15 W. 44th St., New York, N. Y.
Maintenance Eng. Corp., 1802 Conti St., Houston, Texas. See page 150.
Refinery Supply Co., Tulsa, Okla. See page 44.
Republic Flow Meters Co., 2236 Diversey Parkway, Chicago, Ill.
C. J. Tagliabue Mfg. Co., 18 33rd St., Brooklyn, N. Y. See page 49.
Taylor Instrument Co., Rochester, N. Y. See page 150.
Uehling Instrument Co., 475 Getty Ave., Paterson, N. J.
Carl H. Wagner, 1944 W. Albany Ave., Chicago, Ill.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

RECORDERS, Motion and Operation

The Bristol Co., Waterbury, Conn. See page 154.

RECORDERS, Position

Electric Tachometer Corp., 310 N. Eleventh St., Philadelphia, Pa.

RECORDERS, Speed

Electric Tachometer Corp., 310 N. Eleventh St., Philadelphia, Pa.

RECTIFYING COLUMNS

C. F. Braun & Co., Alhambra, Cal. See pages 78-79.
J. P. Devine Co., 1380 Clinton, Buffalo, N. Y.
Ernest H. DuVivier, 30 Church St., New York, N. Y.
Philadelphia Coppersmithing Co., 222 N. Front St., Philadelphia, Pa.
Southwestern Engineering Co., Hollingsworth Bldg., Los Angeles, Cal. See page 109.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.

RECUPERATORS

The Calorizing Co., Wilkinsburg, Pa.
York Manufacturing Co., York, Pa. See page 143.

REDUCERS, Speed

The Hill Clutch Machine & Foundry Co., Cleveland, Ohio
Hoist & Crane Eng. Co., New York, N. Y.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
Union Engineering Co., Cleveland, Ohio.
T. B. Wood's Sons Co., Chambersburg, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

REFRACTOMETERS

Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
J. P. Devine Co., 1380 Clinton, Buffalo, N. Y.
Arthur H. Thomas Co., W. Washington Square, Philadelphia, Pa.

REFRACTORIES

Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
American Gas Construction Co., Newton, Iowa
Briggs Weaver Machinery Co., Dallas, Texas
Chicago Retort & Fire Brick Co., 208 S. La Salle St., Chicago, Ill.
Drake Non-Clinkering Furnace Blk. Co., 5 Beekman St., New York, N. Y.
Eureka Fire Brick Works, 1507 First Nat. Bank Bldg., Pittsburgh, Pa.
Evens & Howard Fire Brick Co., 920 Market St., St. Louis, Mo.
A. P. Green Fire Brick Co., Mexico, Mo.
Greene Brothers, Wichita Falls, Texas. See page 61.
T. K. Harris, Polytechnic Station, Fort Worth, Texas.
McLeod & Henry Co., Troy, N. Y.
Norton Co., Worcester, Mass.
S. Obermayer Co., 2563 W. 18th St. Chicago, Ill.
Petroleum Iron Works, Sharon, Pa.
Quigley Furnace Specialties Co., 25 Church St., New York, N. Y.
Standard Fuel Engr'g Co., 667-687 Post Ave., So. Detroit, Mich.

REFRIGERATING Machinery

American Engineering Co., Philadelphia, Pa.
Arctic Ice Machine Co., Canton, Ohio
Armstrong Machinery Co., 3201-19 E. Riverside, Spokane, Wash.
Audiffren Refrigerating Machine Co., 285 Madison Ave., New York, N. Y.
Baker Ice Machine Co., 3601 Evans St., Omaha, Nebr.
Carbondale Machine Co., Carbondale, Pa.
Columbian Steel Tank Co., 1401-1631 W. Twelfth St., Kansas City, Mo.
Cooper, C. & G., Co., Mt. Vernon, Ohio. See pages 30-31.
Ingersoll-Rand Co., 11 Broadway, New York, N. Y.
Jarvis Engineering Co., 51 Ellery St,. Boston, Mass.
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.
Milwaukee Steam Appliance Co., West Allis, Wis.
National Supply Co., Toledo, Ohio
Peden Iron & Steel Co., Houston, Texas. See page 85.
Refinery Supply Co., Tulsa, Okla. See page 44.
Refrigerating Specialties Co., 714 S. Sacramento Blvd., Chicago, Ill.
Southern Engine & Pump Co., Houston, Texas
Triumph Electric Co., Cincinnati, Ohio
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
The Vilter Mfg. Co., 936 Milwaukee St., Milwaukee, Wis. See page 161.
Henry Vogt Machine Co., Louisville, Ky. See page 5.
York Manufacturing Co., York, Pa. See page 143.

REFRIGERATORS, Electric

Langstadt-Meyer Co., Appleton, Wis.

REGULATORS

The Alexander Milburn Co., 1416 W. Baltimore St., Baltimore, Md.
Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
American Schaeffer & Budenberg Corp., Berry & S. 5th St., Brooklyn, N. Y. See page 153.
Atlas Valve Co., 282 South St., Newark, N. J.
Boiler Engineering Co., 760 Broad St., Newark, N. J.
Briggs Weaver Machinery Co., Dallas, Texas
The Bristol Co., Waterbury, Conn. See page 154.
Carbic Mfg. Co., Duluth, Minn.
A. W. Cash Co., 3rd & Eldorado Sts., Decatur, Ill.
The Chaolin-Fulton Co., 28 Penn Ave., Pittsburgh, Pa. See page 159.
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Defender Automatic Regulator Co., 709 Pine St., St. Louis, Mo.
Julian d'Este Co., 26 Canal St., Boston, Mass.
Equitable Meter and Mfg. Co., 422-444 Forst Ave., Pittsburgh, Pa.

Fisher Governor Co., Marshalltown, Iowa. See page 81.
Greene Brothers, Wichita Falls, Texas. See page 61.
Houston Armature Works, Houston, Texas
Kelley & Mueller, Inc., 34 W. Thirteenth St., New York, N. Y.
Leslie Co., Lyndhurst, N. J.
F. J. Low Co., Inc., 15 W. 44th St., New York, N. Y.
Maintenance Eng. Corp., 1802 Conti St., Houston, Texas. See page 150.
McAlear Mfg. Co., 1901-07 S. Western Ave., Chicago, Ill.
National Oxygen Co., 5811 W. 66th St., Chicago, Ill.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Oil Well Supply Co., Pittsburgh, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Plouff Co., 170 Summer St., Boston, Mass.
Powers Regulator Co., 2720 Greenview Ave., Chicago, Ill.
Refinery Supply Co., Tulsa, Okla. See page 44.
Refrigerating Specialties Co., 714 S. Sacramento Blvd., Chicago, Ill.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
"S-C" Regulator Mfg. Co., Fostoria, Ohio.
Spencer Regulator Co., Cor. Derby & Liberty Sts., Salem, Mass.
C. J. Tagliabue Mfg. Co., 18 33rd St., Brooklyn, N. Y. See page 49.
Taylor Instrument Co., Rochester, N. Y. See page 160.
Walworth Company, 88 Pearl St., Boston, Mass.
Westcott & Greis, Inc., Tulsa, Okla. See page 15.
Wilgus Mfg. Co., 1732 E. Sixteenth St., Los Angeles, Calif.
G. E. Witt Co., Inc., 862-64 Howard St., San Francisco, Calif.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

REGULATORS, Automatic

Wilgus Mfg. Co., 1732 E. Sixteenth St., Los Angeles, Calif.

REGULATORS, Automatic Pressure

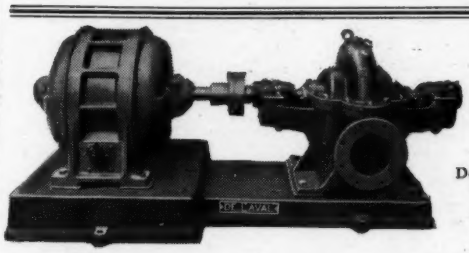
Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
American Schaeffer & Budenberg Corp., Berry & S. 5th St., Brooklyn, N. Y. See page 153.
American Tank Co., Okla. City, Okla.
Atlas Valve Co., 282 South St., Newark, N. J.
Baker Ice Machine Co., 3601 Evans St., Omaha, Nebr.
Barrett, Haentjens & Co., Pine and Buttonwood Sts., Hazleton, Pa.
H. Belfield Co., 435 N. Broad St., Philadelphia, Pa.
Briggs Weaver Machinery Co., Dallas, Texas
Brown Instrument Co., 4537 Wayne Ave., Philadelphia, Pa.
Burdett Mfg. Co., 309 St. Johns Court, Chicago, Ill.
A. W. Cash Co., 3rd & Eldorado Sts., Decatur, Ill.
Central Automatic Sprinkler Co., 5145 Delancey St., Philadelphia, Pa.
The Chaplin-Fulton Co., 28 Penn Ave., Pittsburgh, Pa. See page 159.
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Defender Automatic Regulator Co., 709 Pine St., St. Louis, Mo.
Eclipse Fuel Engineering Co., Rockford, Ill.
Electric Controller & Mfg. Co., 2700 E. Seventy-Ninth St., Cleve-
Equitable Meter and Mfg. Co., 422-444 First Ave., Pittsburgh, Pa.
Julian d'Este Co., 26 Canal St., Boston, Mass.
Fisher Governor Co., Marshalltown, Iowa. See page 81.
Fort Worth Laboratories, 828½ Monroe St., Ft. Worth, Texas. See page 158.
Greene Brothers, Wichita Falls, Texas. See page 61.
Griscom-Russell Co., 285 Madison Ave., New York, N. Y. See page 133.
Houston Armature Works, Houston, Texas
Kelley & Mueller, Inc., 34 W. Thirteenth St., New York, N. Y.
Leslie Co., Lyndhurst, N. J.
Maintenance Eng. Corp., 1802 Conti St., Houston, Texas. See page 150.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
land, Ohio.
McAlear Mfg. Co., 1901-07 S. Western Ave., Chicago, Ill.
McDonough Coal Saving Corp'n., 3955 Grand River Ave., Detroit, Mich.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Plouff Co., 170 Summer St., Boston, Mass.
Powers Regulator Co., 2720 Greenview Ave., Chicago, Ill.
Refinery Supply Co., Tulsa, Okla. See page 44.
Refrigerating Specialties Co., 714 S. Sacramento Blvd., Chicago, Ill.
Smiths Inventions, Inc., 2636 Fourth St., S.E., Minneapolis, Minn.
Spencer Regulator Co., Cor. Derby & Liberty Sts., Salem, Mass.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St Louis, Mo.
Stickle Steam Specialties Co., Indianapolis, Ind.
C. J. Tagliabue Mfg. Co., 18 33rd St., Brooklyn, N. Y. See page 49.
Taylor Instrument Co., Rochester, N. Y. See page 160.
Union Water Meter Co., Worcester, Mass.
G. E. Witt Co., Inc., 862-64 Howard St., San Francisco, Calif.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

REGULATORS, Automatic Refrigerating Machinery

Refrigerating Specialties Co., 714 S. Sacramento Blvd., Chicago, Ill.

REGULATORS, Automatic Temperature

American Gas Furnace Co., Lafayette, Spring and Elizabeth St., Elizabeth, N. J.
American Schaeffer & Budenberg Corp., Berry & S. 5th St., Brooklyn, N. Y. See page 153.
Atlas Valve Co., 282 South St., Newark, N. J.
Baker Ice Machine Co., 3601 Evans St., Omaha, Nebr.
Briggs Weaver Machinery Co., Dallas, Texas
The Bristol Co., Waterbury, Conn.
Brown Instrument Co., 4537 Wayne Ave., Philadelphia, Pa.
Central Automatic Sprinkler Co., 5145 Delancey St., Philadelphia, Pa.
Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Eclipse Fuel Engineering Co., Rockford, Ill.
Julian d'Este Co., 26 Canal St., Boston, Mass.
Fort Worth Laboratories, 828½ Monroe St., Ft. Worth, Texas. See page 158.
Greene Brothers, Wichita Falls, Texas. See page 61.
Kelley & Mueller, Inc., 34 W. Thirteenth St., New York, N. Y.
F. J. Low Co., Inc., 15 W. 44th St., New York, N. Y.
Maintenance Eng. Corp., 1802 Conti St., Houston, Texas. See page 150.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Plouff Co., 170 Summer St., Boston, Mass.
Powers Regulator Co., 2720 Greenview Ave., Chicago, Ill.
Refrigerating Specialties Co., 714 S. Sacramento Blvd., Chicago, Ill.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
John Simmons Co., 104-10 Center St., New York, N. Y.
Sterling Engineering Co., 1636-44 Holton St., Milwaukee, Wis.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
C. J. Tagliabue Mfg. Co., 18 33rd St., Brooklyn, N. Y. See page 49.
Taylor Instrument Co., Rochester, N. Y. See page 160.
Geo. A. Weld & Co., 80 Federal St., Boston, Mass.



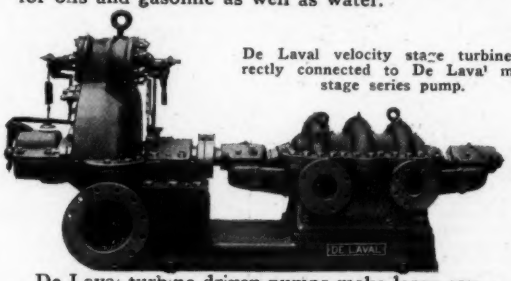
Medium size De Laval motor driven pump

De Laval

Centrifugal Pumps

All Liquids in All Quantities and Against All Heads—Belt, Motor or Steam Turbine Drive

De Laval Centrifugal Pumps are especially designed for reliability and durability, being made from the highest class materials and manufactured on a limit gage, interchangeable basis, so that renewal parts ordered from the factory by number can be inserted by unskilled men without having to be fitted. These pumps are used for oils and gasoline as well as water.

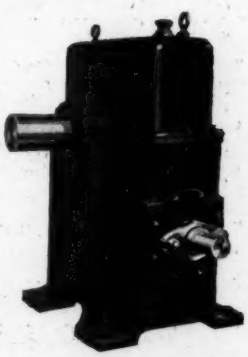


De Laval velocity stage turbine directly connected to De Laval multi-stage series pump.

De Laval turbine driven pumps make large savings in steam consumption over reciprocating pumps. Every De Laval pump is fully guaranteed as to efficiency and head delivery characteristic and is thoroughly tested before leaving the works. Describe your pumping problems and requirements, so that our engineers can submit recommendations. Ask for Catalog B-116.

The De Laval

Worm Reduction Gear is a superior speed reducer used in individual motor drives of slow and moderate speed machinery. It is silent, self-contained, compact, self-oiling, efficient and requires practically no attention further than to see that the oil well is kept filled. It is built in single reductions for ratios up to 100 to 1 and in double reductions up to 8000 to 1. Right or left hand and vertical shaft drives are supplied. Ask for Catalog R-116.



De Laval Worm Reduction Gear for motor drives.

De Laval
Steam Turbine Company
Trenton, New Jersey

438

Local Offices: Atlanta, Boston, Charlotte, Chicago, Cleveland, Denver, Duluth, Helena, Houston, Indianapolis, Kansas City, Los Angeles, Montreal, New York, New Orleans, Philadelphia, Pittsburgh, Portland, Ore., St. Paul, Salt Lake City, San Francisco, Seattle, Spokane, Toronto, Vancouver.

Manufacturers of Steam Turbines, Centrifugal Pumps, Centrifugal Blowers and Compressors, Flexible Couplings, Double Helical Speed Reducing Gears, Worm Gears, Hydraulic Turbines and Special Centrifugal Machinery.

G. E. Witt Co., Inc., 862-64 Howard St., San Francisco, Calif.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

REGULATORS, Back Pressure

Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
Boylston Steam Specialty Co., 116 W. Illinois St., Chicago, Ill.
Briggs Weaver Machinery Co., Dallas, Texas
F. A. Burrows Mfg. Co., 41-45 N. Water St., York, Pa.
A. W. Cash Co., 3rd & Eldorado Sts., Decatur, Ill.
Central Automatic Sprinkler Co., 5145 Delancey St., Philadelphia, Pa.
The Chaplin-Fulton Co., 28 Penn Ave., Pittsburgh, Pa. See page 159.
Continental Supply Co., St. Louis, Missouri
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Equitable Meter and Mfg. Co., 422-444 First Ave., Pittsburgh, Pa.
Greene Brothers, Wichita Falls, Texas. See page 61.
Griscom-Russell Co., 285 Madison Ave., New York, N. Y. See page 133.
Kelley & Mueller, Inc., 34 W. Thirteenth St., New York, N. Y.
Maintenance Eng. Corp., 1802 Conti St., Houston, Texas. See page 150.
McAlear Mfg. Co., 1901-07 Southwestern Ave., Chicago, Ill.
National Valve & Mfg. Co., 31st and Liberty, Pittsburgh, Pa.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Oxweld Acetylene Co., Long Island City, L. I., N. Y.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Pitts & Kitts Mfg. & Supply Co., 91 7th Ave., New York, N. Y.
Plouff Co., 170 Summer St., Boston, Mass.
Refinery Supply Co., Tulsa, Okla. See page 44.
Refrigerating Specialties Co., 714 S. Sacramento Blvd., Chicago, Ill.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
John Simmons Co., 104-10 Center St., New York, N. Y.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Stickle Steam Specialties Co., Indianapolis, Ind.
C. J. Tagliabue Mfg. Co., 18 33rd St., Brooklyn, N. Y. See page 49.
Wilgus Mfg. Co., 1732 E. Sixteenth St., Los Angeles, Cal.

REGULATORS, Boiler Feed

Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
American Schaeffer & Budenberg Corp., Berry & S. 5th St., Brooklyn, N. Y. See page 153.
Atlas Valve Co., 282 South St., Newark, N. J.
Briggs Weaver Machinery Co., Dallas, Texas
F. A. Burrows Mfg. Co., 41-45 N. Water St., York, Pa.
A. W. Cash Co., 3rd & Eldorado Sts., Decatur, Ill.
Central Automatic Sprinkler Co., 5145 Delancey St., Philadelphia, Pa.
The Chaplin-Fulton Co., 28 Penn Ave., Pittsburgh, Pa. See page 159.
Continental Supply Co., St. Louis, Missouri
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Defender Automatic Regulator Co., 709 Pine St., St. Louis, Mo.
Eclipse Fuel Engineering Co., Rockford, Ill.
Paul B. Huyette Co., Inc., 5 South Eighteenth St., Philadelphia, Pa.
Kelley & Mueller, Inc., 34 W. Thirteenth St., New York, N. Y.
Mason Regulator Co., Milton, Mass.
McAlear Mfg. Co., 1901-07 Southwestern Ave., Chicago, Ill.
McDonough Coal Saving Corp'n., 3955 Grand River Ave., Detroit, Mich.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Valve & Mfg. Co., 31st and Liberty, Pittsburgh, Pa.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Oil Well Supply Co., Pittsburgh, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Pitts & Kitts Mfg. & Supply Co., 91 7th Ave., New York, N. Y.
Plouff Co., 170 Summer St., Boston, Mass.
Refinery Supply Co., Tulsa, Okla. See page 44.
"S-C" Regulator Mfg. Co., Fostoria, Ohio.
John Simmons Co., 104-10 Center St., New York, N. Y.
C. E. Squires Co., E. Fortieth St. & Kelley Ave., Cleveland, Ohio.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Stickle Steam Specialties Co., Indianapolis, Ind.
C. J. Tagliabue Mfg. Co., 18 33rd St., Brooklyn, N. Y. See page 49.
Tennant Co., Union National Bank Bldg., Houston, Texas.
Walworth Company, 88 Pearl St., Boston, Mass.
William Gauge Co., 543 Fourth Ave., Pittsburgh, Pa.
G. E. Witt Co., Inc., 862-64 Howard St., San Francisco, Calif.
Wright Austin Co., 315 W. Woodbridge, Detroit, Mich.

REGULATORS, Combustion

Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
Brown Instrument Co., 4537 Wayne Ave., Philadelphia, Pa.
A. W. Cash Co., 3rd & Eldorado Sts., Decatur, Ill.
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Defender Automatic Regulator Co., 709 Pine St., St. Louis, Mo.
Eclipse Fuel Engineering Co., Rockford, Ill.
Engineer Co., 17 Battery Place, New York, N. Y.
Julian d'Este Co., 26 Canal St., Boston, Mass.
Mason Regulator Co., Milton, Mass.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Pitts & Kitts Mfg. & Supply Co., 91 7th Ave., New York, N. Y.
Power Turbo Blower Co., 350 Madison Ave., New York, N. Y.
Refinery Supply Co., Tulsa, Okla. See page 44.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Spencer Regulator Co., Cor. Derby & Liberty Sts., Salem, Mass.

REGULATORS, Damper

Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
Atlas Valve Co., 282 South St., Newark, N. J.
F. A. Burrows Mfg. Co., 41-45 N. Water St., York, Pa.
A. W. Cash Co., 3rd & Eldorado Sts., Decatur, Ill.
Central Automatic Sprinkler Co., 5145 Delancey St., Philadelphia, Pa.
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Defender Automatic Regulator Co., 709 Pine St., St. Louis, Mo.
C. A. Dunham Co., The Dunham Bldg., 450 E. Ohio St., Chicago, Illinois
Engineer Co., 17 Battery Place, New York, N. Y.
Julian d'Este Co., 26 Canal St., Boston, Mass.
Eureka Packing Co., 78-80 Murray St., New York, N. Y.
Paul B. Huyette Co., Inc., 5 South Eighteenth St., Philadelphia, Pa.
Kelley & Mueller, Inc., 34 W. Thirteenth St., New York, N. Y.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Kelly and Jones Co., Greensburg, Pa. See page 75.
Mason Regulator Co., Milton, Mass.
McDonough Coal Saving Corp'n., 3955 Grand River Ave., Detroit, Mich.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Perolin Co. of America, 1112 W. 37th St., Chicago, Illinois
Pitts & Kitts Mfg. & Supply Co., 91 7th Ave., New York, N. Y.
Plouff Co., 170 Summer St., Boston, Mass.
Power Turbo Blower Co., 350 Madison Ave., New York, N. Y.
Powers Regulator Co., 2720 Greenview Ave., Chicago, Ill.
Refinery Supply Co., Tulsa, Okla. See page 44.
Jas. L. Robertson & Son, 79-80 Murray St., New York, N. Y.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
"S-C" Regulator Mfg. Co., Fostoria, Ohio.
John Simmons Co., 104-10 Center St., New York, N. Y.
Spencer Regulator Co., Cor. Derby & Liberty Sts., Salem, Mass.
Stickle Steam Specialties Co., Indianapolis, Ind.
Trane Co., LaCrosse, Wis.
Walworth Company, 88 Pearl St., Boston, Mass.
Watts Regulator Company, 250-252 Lowell St., Lawrence, Mass.

REGULATORS, Draft

Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
Boiler Engineering Co., 760 Broad St., Newark, N. J.
Briggs Weaver Machinery Co., Dallas, Texas
A. W. Cash Co., 3rd & Eldorado Sts., Decatur, Ill.
Central Automatic Sprinkler Co., 5145 Delancey St., Philadelphia, Pa.
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Defender Automatic Regulator Co., 709 Pine St., St. Louis, Mo.
Engineer Co., 17 Battery Place, New York, N. Y.
Mason Regulator Co., Milton, Mass.
McDonough Coal Saving Corp'n., 3955 Grand River Ave., Detroit, Mich.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Plouff Co., 170 Summer St., Boston, Mass.
Power Turbo Blower Co., 350 Madison Ave., New York, N. Y.
Refinery Supply Co., Tulsa, Okla. See page 44.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Spencer Regulator Co., Cor. Derby & Liberty Sts., Salem, Mass.
C. J. Tagliabue Mfg. Co., 18 33rd St., Brooklyn, N. Y. See page 49.

REGULATORS, Engine

Briggs Weaver Machinery Co., Dallas, Texas
A. W. Cash Co., 3rd & Eldorado Sts., Decatur, Ill.
Equitable Meter and Mfg. Co., 422-444 First Ave., Pittsburgh, Pa.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Plouff Co., 170 Summer St., Boston, Mass.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Walworth Company, 88 Pearl St., Boston, Mass.
Watts Regulator Company, 250-252 Lowell St., Lawrence, Mass.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

REGULATORS, Engine, Fan

Mason Regulator Co., Milton, Mass.
Spencer Regulator Co., Cor. Derby & Liberty Sts., Salem, Mass.

REGULATORS, Feed Water

Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
American Schaeffer & Budenberg Corp., Berry & S. 5th St., Brooklyn, N. Y. See page 153.
Atlas Valve Co., 282 South St., Newark, N. J.
Briggs Weaver Machinery Co., Dallas, Texas
Brown Instrument Co., 4537 Wayne Ave., Philadelphia, Pa.
F. A. Burrows Mfg. Co., 41-45 N. Water St., York, Pa.
A. W. Cash Co., 3rd & Eldorado Sts., Decatur, Ill.
Central Automatic Sprinkler Co., 5145 Delancey St., Philadelphia, Pa.
The Chaplin-Fulton Co., 28 Penn Ave., Pittsburgh, Pa. See page 159.
Defender Automatic Regulator Co., 709 Pine St., St. Louis, Mo.
Eclipse Fuel Engineering Co., Rockford, Ill.
Kelley & Mueller, Inc., 34 W. Thirteenth St., New York, N. Y.
McAlear Mfg. Co., 1901-07 S. Western Ave., Chicago, Ill.
McDonough Coal Saving Corp'n., 3955 Grand River Ave., Detroit, Mich.
National Valve & Mfg. Co., 31st and Liberty, Pittsburgh, Pa.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Pitts & Kitts Mfg. & Supply Co., 91 7th Ave., New York, N. Y.
Plouff Co., 170 Summer St., Boston, Mass.
"S-C" Regulator Mfg. Co., Fostoria, Ohio.
John Simmons Co., 104-10 Center St., New York, N. Y.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Stickle Steam Specialties Co., Indianapolis, Ind.
C. J. Tagliabue Mfg. Co., 18 33rd St., Brooklyn, N. Y. See page 49.
Tennant Co., Union National Bank Bldg., Houston, Texas.
Walworth Company, 88 Pearl St., Boston, Mass.
Watts Regulator Company, 250-252 Lowell St., Lawrence, Mass.
William Gauge Co., 543 Fourth Ave., Pittsburgh, Pa.
G. E. Witt Co., Inc., 862-64 Howard St., San Francisco, Calif.
Wright Austin Co., 315 W. Woodbridge, Detroit, Mich.

REGULATORS, Field Dynamo

Houston Armature Works, Houston, Texas
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.

REGULATORS, Gas

American Gas Construction Co., Newton, Iowa
The Bessemer Gas Engine Co., Grove City, Pa. See inside back cover.
Boylston Steam Specialty Co., 116 W. Illinois St., Chicago, Ill.
Briggs Weaver Machinery Co., Dallas, Texas
The Bristol Co., Waterbury, Conn. See page 154.
Carbic Mfg. Co., Duluth, Minn.
A. W. Cash Co., 3rd & Eldorado Sts., Decatur, Ill.
Continental Supply Co., St. Louis, Missouri
Eclipse Fuel Engineering Co., Rockford, Ill.
Equitable Meter and Mfg. Co., 422-444 First Ave., Pittsburgh, Pa.
Fisher Governor Co., Marshalltown, Iowa. See page 81.
Henderson-Willis Welding & Cutting Co., 2305-09 N. Eleventh St., St. Louis, Mo.
McAlear Mfg. Co., 1901-07 S. Western Ave., Chicago, Ill.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Oil Well Supply Co., Pittsburgh, Pa.
Powers Regulator Co., 2720 Greenview Ave., Chicago, Ill.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Sweet & Doyle Foundry & Machine Co., Green Island, Troy, N. Y.
Torchweld Equipment Co., 224 No. Carpenter St., Chicago, Ill.
Westcott & Greis, Inc., Tulsa, Okla. See page 15.
Wilgus Mfg. Co., 1732 E. Sixteenth St., Los Angeles, Cal.
G. E. Witt Co., Inc., 862-64 Howard St., San Francisco, Calif.

REGULATORS, Heat

Briggs Weaver Machinery Co., Dallas, Texas
The Bristol Co., Waterbury, Conn. See page 154.
A. W. Cash Co., 3rd & Eldorado Sts., Decatur, Ill.
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.

If every refiner knew what every Dubbs licensee knows, every refiner would be a Dubbs licensee

Universal Oil Products Company
Owners of the Dubbs Process
310 South Michigan Ave
Chicago, Illinois

Eclipse Fuel Engineering Co., Rockford, Ill.
Greene Brothers, Wichita Falls, Texas. See page 61.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Powers Regulator Co., 2720 Greenview Ave., Chicago, Ill.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
John Simmons Co., 104-10 Center St., New York, N. Y.
C. J. Tagliabue Mfg. Co., 18 33rd St., Brooklyn, N. Y. See page 49.
Taylor Instrument Co., Rochester, N. Y. See page 160.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

REGULATORS, Oil Level

American Schaeffer & Budenberg Corp., Berry & S. 5th St., Brooklyn, N. Y. See page 153.
Amer.can Tank Co., Okla. City, Okla.
Briggs Weaver Machinery Co., Dallas, Texas
Brown Instrument Co., 4537 Wayne Ave., Philadelphia, Pa.
A. W. Cash Co., 3rd & Eldorado Sts., Decatur, Ill.
The Chaplin-Fulton Co., 28 Penn Ave., Pittsburgh, Pa. See page 154.
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Greene Brothers, Wichita Falls, Texas. See page 61.
Griscom-Russell Co., 285 Madison Ave., New York, N. Y. See page 133.
Kelley & Mueller, Inc., 34 W. Thirteenth St., New York, N. Y.
McAlear Mfg. Co., 1901-07 Southwestern Ave., Chicago, Ill.
McDonough Coal Saving Corp'n., 3955 Grand River Ave., Detroit, Mich.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Newton Process Mfg. Co., Fullerton, California.
Refinery Supply Co., Tulsa, Okla. See page 44.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
John Simmons Co., 104-10 Center St., New York, N. Y.
Sweet & Doyle Foundry & Machine Co., Green Island, Troy N. Y. See page 45.
C. J. Tagliabue Mfg. Co., 18 33rd St., Brooklyn, N. Y. See page 49.

REGULATORS, Pressure

Air Reduction Sales Co., 342 Madison Ave., New York, N. Y.
The Alexander Milburn Co., 1416 W. Baltimore St., Baltimore, Md.
Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
American Schaeffer & Budenberg Corp., Berry & S. 5th St., Brooklyn, N. Y. See page 153.
American Tank Co., Okla. City, Okla.
Atlas Valve Co., 282 South St., Newark, N. J.
Baker Ice Machine Co., 3601 Evans St., Omaha, Nebr.
H. Belfield Co., 435 N. Broad St., Philadelphia, Pa.
The Bessemer Gas Engine Co., Grove City, Pa. See inside back cover.
Boylston Steam Specialty Co., 116 W. Illinois St., Chicago, Ill.
Briggs Weaver Machinery Co., Dallas, Texas
Brown Instrument Co., 4537 Wayne Ave., Philadelphia, Pa.
Burdett Mfg. Co., 309 St. Johns Court, Chicago, Ill.
Carbic Mfg. Co., Duluth, Minn.
A. W. Cash Co., 3rd & Eldorado Sts., Decatur, Ill.
Central Automatic Sprinkler Co., 5145 Delancey St., Philadelphia, Pa.
The Chaplin-Fulton Co., 28 Penn Ave., Pittsburgh, Pa. See page 159.
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Defender Automatic Regulator Co., 709 Pine St., St. Louis, Mo.
Engineer Co., 17 Battery Place, New York, N. Y.
Equitable Meter and Mfg. Co., 422-444 First Ave., Pittsburgh, Pa.
Julian d'Este Co., 26 Canal St., Boston, Mass.
Fisher Governor Co., Marshalltown, Iowa. See page 81.
Greene Brothers, Wichita Falls, Texas. See page 61.
Griscom-Russell Co., 285 Madison Ave., New York, N. Y. See page 133.
Paul B. Huyette Co., Inc., 5 South Eighteenth St., Philadelphia, Pa.
Hydraulic Press Mfg. Co., Mt. Gilead, Ohio.
Kelley & Mueller, Inc., 34 W. Thirteenth St., New York, N. Y.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Kelly and Jones Co., Greensburg, Pa. See page 75.
Leslie Co., Lyndhurst, N. J.
Maintenance Eng. Corp., 1802 Conti St., Houston, Texas. See page 150.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
Mason Regulator Co., Milton, Mass.
McAlear Mfg. Co., 1901-07 Southwestern Ave., Chicago, Ill.
McDonough Coal Saving Corp'n., 3955 Grand River Ave., Detroit, Mich.
Modern Engineering Co., 3411-13 Pine Blvd., St. Louis, Mo. See page 141.
National Oxygen Co., 5811 W. 66th St., Chicago, Ill.
National Valve & Mfg. Co., 31st and Liberty, Pittsburgh, Pa.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Pitts & Kitts Mfg. & Supply Co., 91 7th Ave., New York, N. Y.
Plouff Co., 170 Summer St., Boston, Mass.
Powers Regulator Co., 2720 Greenview Ave., Chicago, Ill.
Refinery Supply Co., Tulsa, Okla. See page 44.
Refrigerating Specialties Co., 714 S. Sacramento Blvd., Chicago, Ill.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
"S-C" Regulator Mfg. Co., Fostoria, Ohio.
Spencer Regulator Co., Cor. Derby & Liberty Sts., Salem, Mass.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Stickle Steam Specialties Co., Indianapolis, Ind.
C. J. Tagliabue Mfg. Co., 18 33rd St., Brooklyn, N. Y. See page 49.
Taylor Instrument Co., Rochester, N. Y. See page 160.
Torchweld Equipment Co., 224 No. Carpenter St., Chicago, Ill.
Walworth Company, 88 Pearl St., Boston, Mass.
Watson & McDaniel Co., 146 N. Seventh St., Philadelphia, Pa.
Wilgus Mfg. Co., 1732 E. Sixteenth St., Los Angeles, Calif.
G. E. Witt Co., Inc., 862-64 Howard St., San Francisco, Calif.

REGULATORS, Auxiliary Pressure

Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 160.
A. W. Cash Co., 3rd & Eldorado Sts., Decatur, Ill.
Central Automatic Sprinkler Co., 5145 Delancey St., Philadelphia, Pa.
The Chaplin-Fulton Co., 28 Penn Ave., Pittsburgh, Pa. See page 159.
Mason Regulator Co., Milton, Mass.
McAlear Mfg. Co., 1901-07 S. Western Ave., Chicago, Ill.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Stickle Steam Specialties Co., Indianapolis, Ind.
Watts Regulator Company, 250-252 Lowell St., Lawrence, Mass.

REGULATORS, Speed

Briggs Weaver Machinery Co., Dallas, Texas
A. W. Cash Co., 3rd & Eldorado Sts., Decatur, Ill.
The Chaplin-Fulton Co., 28 Penn Ave., Pittsburgh, Pa. See page 159.
Mason Regulator Co., Milton, Mass.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Plouff Co., 170 Summer St., Boston, Mass.
The P. H. & F. M. Roots Co., Connersville, Ind. See inside front cover.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.

REGULATORS, Steam Pressure

Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
American Schaeffer & Budenberg Corp., Berry & S. 5th St., Brooklyn, N. Y. See page 153.
Atlas Valve Co., 282 South St., Newark, N. J.
H. Belfield Co., 435 N. Broad St., Philadelphia, Pa.
Boylston Steam Specialty Co., 116 W. Illinois St., Chicago, Ill.
Briggs Weaver Machinery Co., Dallas, Texas
A. W. Cash Co., 3rd & Eldorado Sts., Decatur, Ill.
The Chaplin-Fulton Co., 28 Penn Ave., Pittsburgh, Pa. See page 159.
Central Automatic Sprinkler Co., 5145 Delancey St., Philadelphia, Pa.
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Defender Automatic Regulator Co., 709 Pine St., St. Louis, Mo.
Engineer Co., 17 Battery Place, New York, N. Y.
Julian d'Este Co., 26 Canal St., Boston, Mass.
Fisher Governor Co., Marshalltown, Iowa. See page 81.
Greene Brothers, Wichita Falls, Texas. See page 61.
Hydraulic Press Mfg. Co., Mt. Gilead, Ohio.
Kelley & Mueller, Inc., 34 W. Thirteenth St., New York, N. Y.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Leslie Co., Lyndhurst, N. J.
F. J. Low Co., Inc., 15 W. 44th St., New York, N. Y.
Maintenance Eng. Corp., 1802 Conti St., Houston, Texas. See page 150.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
Mason Regulator Co., Milton, Mass.
McAlear Mfg. Co., 1901-07 Southwestern Ave., Chicago, Ill.
McDonough Coal Saving Corp'n., 3955 Grand River Ave., Detroit, Mich.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Pitts & Kitts Mfg. & Supply Co., 91 7th Ave., New York, N. Y.
Plouff Co., 170 Summer St., Boston, Mass.
Powers Regulator Co., 2720 Greenview Ave., Chicago, Ill.
"S-C" Regulator Mfg. Co., Fostoria, Ohio.
Spencer Regulator Co., Cor. Derby & Liberty Sts., Salem, Mass.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Stickle Steam Specialties Co., Indianapolis, Ind.
C. J. Tagliabue Mfg. Co., 18 33rd St., Brooklyn, N. Y. See page 49.
Walworth Company, 88 Pearl St., Boston, Mass.
Watson & McDaniel Co., 146 N. Seventh St., Philadelphia, Pa.
Wilgus Mfg. Co., 1732 E. Sixteenth St., Los Angeles, Calif.
G. E. Witt Co., Inc., 862-64 Howard St., San Francisco, Calif.

REGULATORS, Stoker

Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
A. W. Cash Co., 3rd & Eldorado Sts., Decatur, Ill.
Defender Automatic Regulator Co., 709 Pine St., St. Louis, Mo.
Engineer Co., 17 Battery Place, New York, N. Y.
Julian d'Este Co., 26 Canal St., Boston, Mass.
Mason Regulator Co., Milton, Mass.
McDonough Coal Saving Corp'n., 3955 Grand River Ave., Detroit, Mich.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Pitts & Kitts Mfg. & Supply Co., 91 7th Ave., New York, N. Y.
Spencer Regulator Co., Cor. Derby & Liberty Sts., Salem, Mass.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Stickle Steam Specialties Co., Indianapolis, Ind.

REGULATORS, Temperature

American Gas Furnace Co., Lafayette, Spring and Elizabeth St., Elizabeth, N. J.
American Schaeffer & Budenberg Corp., Berry & S. 5th St., Brooklyn, N. Y. See page 153.
Atlas Valve Co., 282 South St., Newark, N. J.
Baker Ice Machine Co., 3601 Evans St., Omaha, Nebr.
The Bristol Co., Waterbury, Conn. See page 154.
Brown Instrument Co., 4537 Wayne Ave., Philadelphia, Pa.
A. W. Cash Co., 3rd & Eldorado Sts., Decatur, Ill.
Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Eclipse Fuel Engineering Co., Rockford, Ill.
Julian d'Este Co., 26 Canal St., Boston, Mass.
Fort Worth Laboratories, 828½ Monroe St., Ft. Worth, Texas. See page 158.
Greene Brothers, Wichita Falls, Texas. See page 61.
Hoskins Mfg. Co., 4437 Lawton Ave., Detroit, Mich.
Kelley & Mueller, Inc., 34 W. Thirteenth St., New York, N. Y.
F. J. Low Co., Inc., 15 W. 44th St., New York, N. Y.
Maintenance Eng. Corp., 1802 Conti St., Houston, Texas. See page 150.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Powers Regulator Co., 2720 Greenview Ave., Chicago, Ill.
Refinery Supply Co., Tulsa, Okla. See page 44.
Refrigerating Specialties Co., 714 S. Sacramento Blvd., Chicago, Ill.
Sarco Co., Inc., 183 Madison Ave., New York, N. Y.
Sterling Engineering Co., 1636-44 Holton St., Milwaukee, Wis.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
C. J. Tagliabue Mfg. Co., 18 33rd St., Brooklyn, N. Y. See page 49.
Taylor Instrument Co., Rochester, N. Y. See page 60.
Wilson Maeulen Co., 383 Concord Ave., New York, N. Y.
G. E. Witt Co., Inc., 862-64 Howard St., San Francisco, Calif.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

REGULATORS, Vacuum

American Schaeffer & Budenberg Corp., Berry & S. 5th St., Brooklyn, N. Y. See page 153.
American Tank Co., Okla. City, Okla.
Boylston Steam Specialty Co., 116 W. Illinois St., Chicago, Ill.
Brown Instrument Co., 4537 Wayne Ave., Philadelphia, Pa.
A. W. Cash Co., 3rd & Eldorado Sts., Decatur, Ill.
The Chaplin-Fulton Co., 28 Penn Ave., Pittsburgh, Pa. See page 159.
Defender Automatic Regulator Co., 709 Pine St., St. Louis, Mo.
Equitable Meter and Mfg. Co., 422-444 First Ave., Pittsburgh, Pa.
Fisher Governor Co., Marshalltown, Iowa. See page 81.
Greene Brothers, Wichita Falls, Texas. See page 61.
Mason Regulator Co., Milton, Mass.
McAlear Mfg. Co., 1901-07 Southwestern Ave., Chicago, Ill.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Plouff Co., 170 Summer St., Boston, Mass.
Refinery Supply Co., Tulsa, Okla. See page 44.
"S-C" Regulator Mfg. Co., Fostoria, Ohio.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Stickle Steam Specialties Co., Indianapolis, Ind.
G. E. Witt Co., Inc., 862-64 Howard St., San Francisco, Calif.

REGULATORS Water Heater

Atlas Valve Co., 282 South St., Newark, N. J.

Defender Automatic Regulator Co., 709 Pine St., St. Louis, Mo.
Equitable Meter and Mfg. Co., 422-444 First Ave., Pittsburgh, Pa.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
McDonough Coal Saving Corp'n., 3955 Grand River Ave., Detroit, Mich.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Plouff Co., 170 Summer St., Boston, Mass.
Powers Regulator Co., 2720 Greenview Ave., Chicago, Ill.
Refinery Supply Co., Tulsa, Okla. See page 44.
John Simmons Co., 104-10 Center St., New York, N. Y.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
C. J. Tagliabue Mfg. Co., 18 33rd St., Brooklyn, N. Y. See page 49.
Thermal Efficiency Co., 1210 Scarritt Bldg., Kansas City, Mo. See page 113.
Walworth Company, 88 Pearl St., Boston, Mass.

REGULATORS, Water Level

Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
American Schaeffer & Budenberg Corp., Berry & S. 5th St., Brooklyn, N. Y. See page 153.
American Tank Co., Okla. City, Okla.
Atlas Valve Co., 282 South St., Newark, N. J.
Barrett, Haentjens & Co., Pine and Buttonwood Sts., Hazleton, Pa.
F. A. Burrows Mfg. Co., 41-45 N. Water St., York, Pa.
The Chaplin-Fulton Co., 28 Penn Ave., Pittsburgh, Pa. See page 159.
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Defender Automatic Regulator Co., 709 Pine St., St. Louis, Mo.
Eclipse Fuel Engineering Co., Rockford, Ill.
Electric Controller & Mfg. Co., 2700 E. Seventy-Ninth St., Cleveland, Ohio.
Greene Brothers, Wichita Falls, Texas. See page 61.
Griscom-Russell Co., 285 Madison Ave., New York, N. Y. See page 133.
Paul B. Huyette Co., Inc., 5 South Eighteenth St., Philadelphia, Pa.
Kelley & Mueller, Inc., 34 W. Thirteenth St., New York, N. Y.
McAlear Mfg. Co., 1901-07 Southwestern Ave., Chicago, Ill.
McDonough Coal Saving Corp'n., 3955 Grand River Ave., Detroit, Mich.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Pitts & Kitts Mfg. & Supply Co., 91 7th Ave., New York, N. Y.
Plouf Co., 170 Summer St., Boston, Mass.
Refinery Supply Co., Tulsa, Okla. See page 44.
"S-C" Regulator Mfg. Co., Fostoria, Ohio.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Stickle Steam Specialties Co., Indianapolis, Ind.
C. J. Tagliabue Mfg. Co., 18 33rd St., Brooklyn, N. Y. See page 49.
William Gauge Co., 543 Fourth Ave., Pittsburgh, Pa.
G. E. Witt Co., Inc., 862-64 Howard St., San Francisco, Calif.

REGULATORS—Welding

Oxweld Acetylene Co., Long Island City, L. I., N. Y.

RELAYS

Electric Controller & Mfg. Co., 2700 E. Seventy-Ninth St., Cleveland, Ohio.

REMOVERS, Scale

Wm. B. Pierce Co., 45 N. Division St. Buffalo, N. Y.
Ward Chemical Co., Tulsa, Okla. See page 119.

RESISTORS

Electric Controller & Mfg. Co., 2700 E. Seventy-Ninth St., Cleveland, Ohio.

RESPIRATORS

Continental Supply Co., St. Louis, Missouri
Thos. H. Dallett Co., 165-89 W. Clearfield St., Philadelphia, Pa.
Greene Brothers, Wichita Falls, Texas. See page 61.
Improved Aluminum Gaso Protector Co., 72.6 Ridge Blvd., Chicago, Ill.
Kolesch & Co., 138 Fulton St., New York, N. Y.
Mine Safety Appliances Co., 908-12 Chamber of Commerce Bldg., Pittsburgh, Pa. See page 162.
Pulmosan Safety Equipment Co., 45 Willoughby St., Brooklyn, N. Y. See page 159.

RESUSCITATION EQUIPMENT, Inhalators

Mine Safety Appliances Co., 908-12 Chamber of Commerce Bldg., Pittsburgh, Pa. See page 162.

RETORTS

Barnhart-Davis Co., Warren, Pa.
J. P. Devine Co., 1380 Clinton, Buffalo, N. Y.
Greene Brothers, Wichita Falls, Texas. See page 61.
Petroleum Iron Works, Sharon, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

RETORTS, Gas

American Gas Construction Co., Newton, Iowa

RETURN BENDS

Arctic Ice Machine Co., Canton, Ohio
Baker Ice Machine Co., 3601 Evans St., Omaha, Nebr.
H. Belfield Co., 435 N. Broad St., Philadelphia, Pa.
Briggs Weaver Machinery Co., Dallas, Texas
Carbondale Machine Co., Carbondale, Pa.
Greene Brothers, Wichita Falls, Texas. See page 61.
Grinnell Co., Inc., Providence, R.I.
Harrisburg Pipe & Pipe Bending Co,. Houston, Texas
Hartwell Iron Works, Houston, Texas
Hughes Tool Co., 300 Hughes St., Houston, Texas. See insert.
Illinois Mallable Iron Co., 1801 Diversey Blvd., Chicago, Ill.
The Kennedy Valve Mfg. Co., Elmira, N. Y.
Key Boiler & Equipment Co., 27th and McCasland, E. St. Louis, Ill.
Milwaukee Steam Appliance Co., West Allis, Wis.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
National Valve & Mfg. Co., 31st and Liberty, Pittsburgh, Pa.
The Ohio Steel Foundry Co., Springfield, Ohio
Oil Well Supply Co., Pittsburgh, Pa.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Pittsburgh Pipe Coil & Bending Co., 61 Bridge St., Etna, Pa.
John Simmons Co., 104-10 Center St., New York, N. Y.
Standard Piping & Fittings Co., 30th and Race Sts., Philadelphia, Pa.
The Superheater Co, 17 E. 42nd St., New York City, N. Y.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Henry Vogt Machine Co., Louisville, Ky. See page 5.
Walworth Company, 88 Pearl St., Boston, Mass.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

RETURN BENDS, Lead Lined

United Lead Co., 111 Broadway, New York, N. Y.

RETURN SYSTEMS, Condensation

McAlear Mfg. Co., 1901-07 Southwestern Ave., Chicago, Ill.
W. H. Nicholson & Co., 12 Oregon St., Wilkes-Barre, Pa.
Ocean Shore Iron Works, 550 Eighth St., San Francisco, Cal.f.
Rider-Erickson Engine Corp., 11 Broadway, New York, N. Y.
Sweet & Doyle Foundry & Machine Co., Green Island, Troy, N. Y. See page 45.
Trane Co., LaCrosse, Wis.

RHEOSTATS

James G. Biddle, 1211-1213 Arch St., Philadelphia, Pa.
Electric Controller & Mfg. Co., 2700 E. Seventy-Ninth St., Cleveland, Ohio.

RINGS, Asbestos Packing

Keasbey & Mattison Co., Ambler, Pa.

RINGS, Chemical

Briggs Weaver Machinery Co., Dallas, Texas
Fort Worth Laboratories, 828½ Monroe St., Ft. Worth, Texas. See page 158.

RINGS, Pump Packing

Keasbey & Mattison Co., Ambler, Pa.

RINGS, Valve

Judd & Leland Mfg. Co., Clifton Springs, N. Y.

RIVETERS, Pneumatic

Brazelton, Wessendorff & Nelms, Houston, Texas
Briggs Weaver Machinery Co., Dallas, Texas
Canton Pneumatic Co., Canton Ohio.
Chicago Pneumatic Tool Co., 6 E. 44th St., New York, N. Y.
Hanna Engineering Works, 1769 Elston Ave., Chicago, Ill.
Ingersoll-Rand Co., 11 Broadway, New York, N. Y.
King Pneumatic Tool Co., 1733 Armitage Ave., Chicago, Ill.
May Machinery Co., Second National Bank Bldg., Houston, Tex.
National Supply Co., Toledo, Ohio
Peden Iron & Steel Co., Houston, Texas. See page 85.
Joseph T. Ryerson & Sons, 2558 W. 16th St., Chicago, Ill.
F. F. Slocomb & Co., Inc., Wilmington, Del.
Tennant Co., Union National Bank Bldg., Houston, Texas.
R. D. Wood & Co., 400 Chestnut St., Philadelphia, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

RIVETS

American Brass Co., Waterbury, Conn.
Bethlehem Steel Co., Bethlehem, Pa.
Briggs Weaver Machinery Co., Dallas, Texas
Chattanooga Boiler & Tank Co., Box 316, Chattanooga, Tenn.
John Dollinger, Jr., Inc., Box 423, Beaumont, Texas
Fort Worth Steel & Machinery Co., Fort Worth, Texas
Harrisburg Pipe & Pipe Bending Co,. Houston, Texas
Kansas City Structural Steel Co., Kansas City, Kansas.
Mosher Steel and Machinery Co., 900 S. Austin St., Dallas, Texas
National Supply Co., Toledo, Ohio
North American Car Co., 327 S. LaSalle St., Chicago, Ill. See page 156.
Oil Well Supply Co., Pittsburgh, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Pioneer Tank & Boiler Co., Box 1926, Tulsa, Okla. See page 149.
Joseph T. Ryerson & Sons, 2558 W. 16th St., Chicago, Ill.
Sculley Steel & Iron Co., Chicago, Ill.
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
The Stanwood Corp., Cincinnati, O.
Texas Carnegie Steel Assn., Galveston, Texas.
Tulsa Boiler & Machinery Co., P. O. Box 1963, Tulsa, Okla.
Union Iron Works, Selma, Ala.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Wm. Wharton, Jr. & Co., Inc., 30 Church St., New York, N. Y.
The Youngstown Boiler & Tank Co., Youngstown, Ohio
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

RIVETS, Rubber

La Favorite Rubber Mfg. Co., Wagaraw Rd., Hawthorne, N. J.

RIVET, Sets

Bethlehem Steel Co., Bethlehem, Pa.
Brazelton, Wessendorff & Nelms, Houston, Texas
Briggs Weaver Machinery Co., Dallas, Texas
Canton Pneumatic Co., Canton Ohio.
Chicago Pneumatic Tool Co., 6 E. 44th St., New York, N. Y.
Kansas City Structural Steel Co., Kansas City, Kansas.
King Pneumatic Tool Co., 1733 Armitage Ave., Chicago, Ill.
May Machinery Co., Second National Bank Bldg., Houston, Tex.
National Supply Co., Toledo, Ohio
North American Car Co., 327 S. LaSalle St., Chicago, Ill. See page 156.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Joseph T. Ryerson & Sons, 2558 W. 16th St., Chicago, Ill.
Sculley Steel & Iron Co., Chicago, Ill.
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
Tennant Co., Union National Bank Bldg., Houston, Texas.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

RODS, Pump

Bridgeport Brass Co., Bridgeport, Conn.
Briggs Weaver Machinery Co., Dallas, Texas
Carbondale Machine Co., Carbondale, Pa.
Continental Supply Co., St. Louis, Missouri
Cyclops Steel Co., Titusville, Pa.
Greene Brothers, Wichita Falls, Texas. See page 61.
Langstadt-Meyer Co., Appleton, Wis.
National Supply Co., Toledo, Ohio
Oil Well Supply Co., Pittsburgh, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
A. R. Purdy Co., Inc., 790-4 Greenwich St., New York, N. Y.
United Alloy Steel Corp., Canton, Ohio.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

ROOFING, Asbestos and Rag Felt

Philip Carey Co., Cincinnati, Ohio

ROOFING, Asphalt

The Barber Asphalt Co., 1600 Arch St., Philadelphia, Pa.

ROOFING, Corrugated

American Rolling Mill Co., Middletown, Ohio
R. V. Aycock Co., Kansas City, Mo.
Bethlehem Steel Co., Bethlehem, Pa.
Continental Supply Co., St. Louis, Missouri
Fort Worth Steel & Machinery Co., Fort Worth, Texas
Johns-Manville Inc., 292 Madison Ave., New York, N. Y.
Nitingale & Childs Co., 195 Albany St., Cambridge Sta., Boston, Mass.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Penn Metal Co., 675 Concord Ave., Cambridge, Mass.
Philip Carey Co., Cincinnati, Ohio
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
Rogers Asbestos Co., Houston, Texas
Joseph T. Ryerson & Sons, 2558 W. 16th St., Chicago, Ill.
Sculley Steel & Iron Co., Chicago, Ill.
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
Thorn, J. S. Co., 12th and Allegheny Ave., Philadelphia, Pa.
United Alloy Steel Corp., Canton, Ohio.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

ROOFING, Prepared

Paraffine Cos. Inc., San Francisco, Calif.

RUBBER GOODS, Mechanical

Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
Briggs Weaver Machinery Co., Dallas, Texas
Continental Supply Co., St. Louis, Mo.
Diamond Rubber Co., Inc., Akron, Ohio.
B. F. Goodrich Rubber Co., Akron, Ohio
Greene Brothers, Wichita Falls, Texas. See page 61.
Hercules Supply Co., Corsicana, Texas
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
La Favorite Rubber Mfg. Co., Wagaraw Rd., Hawthorne, N. J.
The Manhattan Rubber Mfg. Co., Passaic, N. J.
National Supply Co., Toledo, Ohio
New York Belting & Packing Co., 91-93 Chamber St., New York, N. Y.
The C. F. Pease Co., 866 N. Franklin St., Chicago, Ill.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Petroleum Supply Co., Houston, Texas
Pioneer Rubber Mills, 353 Sacramento St., San Francisco, Calif.
Republic Rubber Co., Youngstown, Ohio
Texas Belting Co., Houston, Texas.
Union Iron Works, Selma, Ala.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

RULES

Abbott-McKay Corp., 21 Pearl St., Boston, Mass.
Brazelton, Wessendorff & Nelms, Houston, Texas
Briggs Weaver Machinery Co., Dallas, Texas
Continental Supply Co., St. Louis, Missouri
Eugene Dietzgen Co., 162-166 W. Monroe St., Chicago, Ill.
Goodell-Pratt Co., 57 Wells St., Greenfield, Mass.
Greene Brothers, Wichita Falls, Texas. See page 61.
Kolesch & Co., 138 Fulton St., New York, N. Y.
The Lufkin Rule Company, Saginaw, Michigan.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
National Supply Co., Toledo, Ohio
Peden Iron & Steel Co., Houston, Texas. See page 85.
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
The L. S. Starrett Co., Athol, Mass.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

RULES, Slide

Abbott-McKay Corp., 21 Pearl St., Boston, Mass.
Continental Supply Co., St. Louis, Missouri
Eugene Dietzgen Co., 162-166 W. Monroe St., Chicago, Ill.
Fort Worth Laboratories, 828½ Monroe St., Ft. Worth, Texas. See page 158.
Gilson Slide Rule Co., Niles, Mich.
Greene Brothers, Wichita Falls, Texas. See page 61.
Keuffel & Esser Co., Hoboken, N. J.
Kolesch & Co., 138 Fulton St., New York, N. Y.
The C. F. Pease Co., 866 N. Franklin St., Chicago, Ill.
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
Williams, Brown & Earle, 918 Chestnut St., Philadelphia, Pa. See page 149
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

RUNWAYS Tank Car

The Acme Tank Car Co., Coffeyville, Kansas
John Dollinger, Jr., Inc., Box 423, Beaumont, Texas
Fort Worth Steel & Machinery Co., Fort Worth, Texas
North American Car Co., 327 S. LaSalle St., Chicago, Ill. See page 156.

S

SADDLES, Manhole

Glasgow Iron Co., Pottstown, Pa.

SADDLES, Pipe

M. B. Skinner Co., 562 Washington Blvd., Chicago, Ill.

SADDLES, Service

M. B. Skinner Co., 562 Washington Blvd., Chicago, Ill.

SAFETY DEVICES, Automatic Refrigerating Machinery

Refrigerating Specialties Co., 714 S. Sacramento Blvd., Chicago, Ill.

SANITARY, Equipment

The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.

SAWS, Band

Brazelton, Wessendorff & Nelms, Houston, Texas.
Continental Supply Co., St. Louis, Missouri
Hall & Brown Wood Working Machine Co., Broadway, Tyler & Ninth Sts., St. Louis, Mo.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
National Supply Co., Toledo, Ohio
Peden Iron & Steel Co., Houston, Texas. See page 85.
Joseph T. Ryerson & Sons, 2558 W. 16th St., Chicago, Ill.
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
George W. Smith Co., Dallas, Tex.
Texas Belting Co., Houston, Texas.
Union Iron Works, Selma, Ala.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

SCALES

Fairbanks Co., 416-22 Broome St., New York, N. Y.

SCALES, Fuel Oil

Fairbanks Co., 416-22 Broome St., New York, N. Y.

SCOOPS

Briggs Weaver Machinery Co., Dallas, Texas
Continental Supply Co., St. Louis, Missouri
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
National Supply Co., Toledo, Ohio
Peden Iron & Steel Co., Houston, Texas. See page 85.
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
John Simmons Co., 104-10 Center St., New York, N. Y.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

SCRAPERS, Bearing

Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.

SCRAPERS, Paint

Chicago Pneumatic Tool Co., 6 E. 44th St., New York, N. Y.

SCREW DRIVERS

Goodell-Pratt Co., 57 Wells St., Greenfield, Mass.

SCREW DRIVERS, Electric

John Steptoe Co., 2960 Colerain Ave, Cincinnati, Ohio

SCREWS, Safety-Set

The Bristol Co., Waterbury, Conn. See page 154.

SCRUBBERS

Andrews-Bradshaw Co., 530 Fourth Ave., Pittsburgh, Pa.
J. P. Devine Co., 1380 Clinton, Buffalo, N. Y.
Fort Worth Steel & Machinery Co., Fort Worth, Texas
Hartwell Iron Works, Houston, Texas
Kansas City Structural Steel Co., Kansas City, Kansas.
L. O. Koven & Brother, Inc., 154 Ogden Ave., Jersey City, N.J.
La Favorite Rubber Mfg. Co., Wagaraw Rd., Hawthorne, N. J.
Petroleum Iron Works, Sharon, Pa.
Philadelphia Coppersmithing Co., 222 N. Front St., Philadelphia, Pa.
Pioneer Tank & Boiler Co., Box 1926, Tulsa, Okla. See page 157.
Southwestern Engineering Co., Hollingsworth Bldg., Los Angeles, Cal. See page 109.
Tulsa Boiler & Machinery Co., P. O. Box 1963, Tulsa, Okla.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
York Manufacturing Co., York, Pa. See page 143.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

SCRUBBERS, Gas

American Gas Construction Co., Newton, Iowa

SEPARATORS

Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
American Tank Co., Okla. City, Okla.
Andrews-Bradshaw Co., 530 Fourth Ave., Pittsburgh, Pa.
Austin-Mason Co., 15 Park Row, New York, N. Y.
The Cochrane Corp., 3130 N. 17th St., Philadelphia, Pa.
Columbian Steel Tank Co., 1401-1631 W. Twelfth St., Kansas City, Mo.
Continental Supply Co., St. Louis, Missouri
Cross Engineering Co., 700 Baltimore Ave., Kansas City, Mo. See page 129.
J. P. Devine Co., 1380 Clinton, Buffalo, N. Y.
Finucane Boiler Works, Houston, Texas.
Griscom-Russell Co., 285 Madison Ave., New York, N. Y. See page 133.
Hartwell Iron Works, Houston, Texas
Kelley & Mueller, Inc., 34 W. Thirteenth St., New York, N. Y.
L. O. Koven & Brother, Inc., 154 Ogden Ave., Jersey City, N.J.
Milwaukee Steam Appliance Co., West Allis, Wis.
National Valve & Mfg. Co., 31st and Liberty, Pittsburgh, Pa.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Petroleum Iron Works, Sharon, Pa.
Philadelphia Coppersmithing Co., 222 N. Front St., Philadelphia, Pa.
Pioneer Tank & Boiler Co., Box 1926, Tulsa, Okla. See page 157.
Plouff Co., 170 Summer St., Boston, Mass.
John Simmons Co., 104-10 Center St., New York, N. Y.
Stickle Steam Specialties Co., Indianapolis, Ind.
The Swartwout Co., 18525 Euclid Ave., Cleveland, Ohio.
Sweet & Doyle Foundry & Machine Co., Green Island, Troy, N. Y. See page 45.
Tennant Co., Union National Bank Bldg., Houston, Texas.
Tracy Engineering Co., 479-485 Sixth St., San Francisco, Calif.
Tulsa Boiler & Machinery Co., P. O. Box 1963, Tulsa, Okla.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

SEPARATORS Condensation

Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
A. W. Cash Co., 3rd & Eldorado Sts., Decatur, Ill.
The Cochrane Corp., 3130 N. 17th St., Philadelphia, Pa.
Continental Supply Co., St. Louis, Missouri
Cross Engineering Co., 700 Baltimore Ave., Kansas City, Mo. See page 129.
Finucane Boiler Works, Houston, Texas.
Griscom-Russell Co., 285 Madison Ave., New York, N. Y. See page 133.
Kelley & Mueller, Inc., 34 W. Thirteenth St., New York, N. Y.
McAlear Mfg. Co., 1901-07 S. Western Ave., Chicago, Ill.
Milwaukee Steam Appliance Co., West Allis, Wis.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
H. A. Paine Co., 419-20 Cotton Exchange Bldg., Houston, Texas.
Plouff Co., 170 Summer St., Boston, Mass.
John Simmons Co., 104-10 Center St., New York, N. Y.
Stickle Steam Specialties Co., Indianapolis, Ind.
The Swartwout Co., 18525 Euclid Ave., Cleveland, Ohio.
Sweet & Doyle Foundry & Machine Co., Green Island, Troy, N. Y. See page 45.
Tracy Engineering Co., 479-485 Sixth St., San Francisco, Calif.
D. T. Williams Valve Co., Spring Grove Ave. & Township St., Cincinnati, Ohio. See page 35.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

SEPARATORS, Gasoline

Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
The Bessemer Gas Engine Co., Grove City, Pa.
C. F. Braun & Co., Alhambra, Cal. See pages 78-79.
A. W. Cash Co., 3rd & Eldorado Sts., Decatur, Ill.
Continental Supply Co., St. Louis, Missouri
Cross Engineering Co., 700 Baltimore Ave., Kansas City, Mo. See page 129.
J. P. Devine Co., 1380 Clinton, Buffalo, N. Y.
Finucane Boiler Works, Houston, Texas.
Griscom-Russell Co., 285 Madison Ave., New York, N. Y. See page 133.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Oil Well Supply Co., Pittsburgh, Pa.
Pioneer Tank & Boiler Co., Box 1926, Tulsa, Okla. See page 157.
Refinery Supply Co., Tulsa, Okla.
The Swartwout Co., 18525 Euclid Ave., Cleveland, Ohio.
Sweet & Doyle Foundry & Machine Co., Green Island, Troy, N. Y. See page 45.
Tracy Engineering Co., 479-485 Sixth St., San Francisco, Calif.
Wright Austin Co., 315 W. Woodbridge, Detroit, Mich.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

SEPARATORS, Magnetic

Electric Controller & Mfg. Co., 2700 E. Seventy-Ninth St., Cleveland, Ohio.

SEPARATORS, Oil

Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
American Tank Co., Okla. City, Okla.
Arctic Ice Machine Co., Canton, Ohio
Austin-Mason Co., 15 Park Row, New York, N. Y.
Boylston Steam Specialty Co., 116 W. Illinois St., Chicago, Ill.
A. W. Cash Co., 3rd & Eldorado Sts., Decatur, Ill.
The Cochrane Corp., 3130 N. 17th St., Philadelphia, Pa.
Continental Supply Co., St. Louis, Missouri
Cross Engineering Co., 700 Baltimore Ave., Kansas City, Mo.
De Laval Steam Turbine Co., Trenton, N. J. See page 123.
J. P. Devine Co., 1380 Clinton, Buffalo, N. Y.
C. A. Dunham Co., The Dunham Bldg., 450 E. Ohio St., Chicago, Illinois
Elliott Company, Jeannette, Pa. See page 101.
Finucane Boiler Works, Houston, Texas.
Griscom-Russell Co., 285 Madison Ave., New York, N. Y. See page 133.
Hoppes Mfg. Co., 19 Larch St., Springfield, Ohio.
Kelley & Mueller, Inc., 34 W. Thirteenth St., New York, N. Y.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
McAlear Mfg. Co., 1901-07 Southwestern Ave., Chicago, Ill.
Milwaukee Steam Appliance Co., West Allis, Wis.
National Pipe Bending Co., New Haven, Conn.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Nitingale & Childs Co., 195 Albany St., Cambridge Sta., Boston, Mass.
Wm. W. Nugent & Co., 410-412 N. Hermitage Ave., Chicago, Ill.
Oil Well Supply Co., Pittsburgh, Pa.
Petroleum Iron Works, Sharon, Pa.
Pioneer Tank & Boiler Co., Box 1926, Tulsa, Okla. See page 157.

RADIANT TUBE PIPE STILLS

Operating with a thermal efficiency of above seventy-five per cent.

With a negligible maintenance factor.

And producing yields of gasoline, when used in connection with proper fractionation equipment, considerably beyond those possible by perfect separation alone.

CROSS ENGINEERING CO.

Consulting Engineers

700 Baltimore Ave. Kansas City, Mo.

Plouf Co., 170 Summer St., Boston, Mass.
Power Plant Specialty Co., 440 So. Dearborn St., Chicago, Ill.
Schutte & Koerting Co., 1165 Thompson St., Philadelphia, Pa.
Sims Co., Erie, Pa.
Smith Separator Company, Tulsa, Oklahoma.
Stickle Steam Specialties Co., Indianapolis, Ind.
The Swartwout Co., 18525 Euclid Ave., Cleveland, Ohio.
Sweet & Doyle Foundry & Machine Co., Green Island, Troy, N. Y. See page 45.
Tennant Co., Union National Bank Bldg., Houston, Texas.
Thermal Efficiency Co., 1210 Scarritt Bldg., Kansas City, Mo. See page 113.
Tracy Engineering Co., 479-485 Sixth St., San Francisco, Calif.
D. T. Williams Valve Co., Spring Grove Ave. & Township St., Cincinnati, Ohio. See page 35.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.
Wright Austin Co., 315 W. Woodbridge, Detroit, Mich.
York Manufacturing Co., York, Pa. See page 143.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

SEPARATORS, Steam

Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
Andrews-Bradshaw Co., 530 Fourth Ave., Pittsburgh, Pa.
Austin-Mason Co., 15 Park Row, New York, N. Y.
Briggs Weaver Machinery Co., Dallas, Texas
A. W. Cash Co., 3rd & Eldorado Sts., Decatur, Ill.
The Cochrane Corp., 3130 N. 17th St., Philadelphia, Pa.
Continental Supply Co., St. Louis, Missouri
Cross Engineering Co., 700 Baltimore Ave., Kansas City, Mo. See page 129.
Elliott Company, Jeannette, Pa. See page 101.
Eureka Packing Co., 78-80 Murray St., New York, N. Y.
Finucane Boiler Works, Houston, Texas.
Griscom-Russell Co., 285 Madison Ave., New York, N. Y. See page 133.
Hoppes Mfg. Co., 19 Larch St., Springfield, Ohio.
Paul B. Huyette Co., Inc., 5 South Eighteenth St., Philadelphia, Pa.
Kelley & Mueller, Inc., 34 W. Thirteenth St., New York, N. Y.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
McAlear Mfg. Co., 1901-17 Southwestern Ave., Chicago, Ill.
Milwaukee Steam Appliance Co., West Allis, Wis.
National Supply Co., Toledo, Ohio
National Valve & Mfg. Co., 31st and Liberty, Pittsburgh, Pa.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
W. H. Nicholson & Co., 12 Oregon St., Wilkes-Barre, Pa.
Nitingale & Childs Co., 195 Albany St., Cambridge Sta., Boston, Mass.
Oil Well Supply Co., Pittsburgh, Pa.
H. A. Paine Co., 419-20 Cotton Exchange Bldg., Houston, Texas.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Plouff Co., 170 Summer St., Boston, Mass.
Power Plant Specialty Co., 440 S. Dearborn St., Chicago, Ill.
Jas. L. Robertson & Son, 79-80 Murray St., New York, N. Y.
John Simmons Co., 104-10 Center St., New York, N. Y.
Sims Co., Erie, Pa.
Stickle Steam Specialties Co., Indianapolis, Ind.
The Swartwout Co., 18525 Euclid Ave., Cleveland, Ohio.
Sweet & Doyle Foundry & Machine Co., Green Island, Troy, N. Y. See page 45.
Tennant Co., Union National Bank Bldg., Houston, Texas.
Thermal Efficiency Co., 1210 Scarritt Bldg., Kansas City, Mo. See page 113.
Tracy Engineering Co., 479-485 Sixth St., San Francisco, Calif.
D. T. Williams Valve Co., Spring Grove Ave. & Township St., Cincinnati, Ohio. See page 35.
Walworth Company, 88 Pearl St., Boston, Mass.
Watson & McDaniel Co., 146 N. Seventh St., Philadelphia, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.
Wright Austin Co., 315 W. Woodbridge, Detroit, Mich.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

SEPARATORS, Water

Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
Briggs Weaver Machinery Co., Dallas, Texas
Burt Mfg. Co., Akron, Ohio.
A. W. Cash Co., 3rd & Eldorado Sts., Decatur, Ill.
The Cochrane Corp., 3130 N. 17th St., Philadelphia, Pa.
De Laval Steam Turbine Co., Trenton, N. J. See page 123.
Finucane Boiler Works, Houston, Texas.
Griscom-Russell Co., 285 Madison Ave., New York, N. Y. See page 133.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Wm. W. Nugent & Co., 410-412 No. Hermitage Ave., Chicago, Ill.
Plouff Co., 170 Summer St., Boston, Mass.
John Simmons Co., 104-10 Center St., New York, N. Y.
The Swartwout Co., 18525 Euclid Ave., Cleveland, Ohio.
Sweet & Doyle Foundry & Machine Co., Green Island, Troy, N. Y. See page 45.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

SETTINGS, Boiler

American Gas Construction Co., Newton, Iowa
Erie City Iron Works, Erie, Pa.
McAleenan Bros. Co., Twenty-fifth and Railroad, Pittsburgh, Pa.
Quigley Furnace Specialties Co., 25 Church St., New York, N. Y.

SETTINGS, Water Cooled

The Badenhausen Corp., 1011 Chestnut St., Philadelphia, Pa.

SHAFTING

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Barnhart-Davis Co., Warren, Pa.
The Bessemer Gas Engine Co., Grove City, Pa. See inside back cover.
Briggs Weaver Machinery Co., Dallas, Texas
A. & F. Brown Co., 79 Barclay St., New York, N. Y.
Colburn Gear & Mfg. Co., 98 Holmes St., Norfolk Downs, Mass.
Continental Supply Co., St. Louis, Missouri
Falls Clutch & Machinery Co., Cuyahoga Falls, Ohio.
Hall & Brown Wood Working Machine Co., Broadway, Tyler & Ninth Sts., St. Louis, Mo.
The Hill Clutch Machine & Foundry Co., Cleveland, Ohio
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Jones, W. A., Foundry & Machine Co., 4415 W. Roosevelt Road, Chicago, Illinois
Jones & Laughlin Steel Corp., Ross St., Pittsburgh, Pa.
Kansas City Structural Steel Co., Kansas City, Kansas.
Mesta Machine Co., Pittsburgh, Pa.
Moloch Co., Kaukauna, Wis.
National Supply Co., Toledo, Ohio
Peden Iron & Steel Co., Houston, Texas. See page 85.
A. R. Purdy Co., Inc., 790-4 Greenwich St., New York, N. Y.
Joseph T. Ryerson & Sons, 2558 W. 16th St., Chicago, Ill.
Sculley Steel & Iron Co., Chicago, Ill.
Texas Belting Co., Houston, Texas.
Texas Carnegie Steel Assn., Galveston, Texas.
Union Iron Works, Selma, Ala.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Weller Mfg. Co., 1820 N. Kostnor Ave., Chicago, Ill.
Western Iron & Foundry Co., Wichita, Kansas. See page 89.
T. B. Wood's Sons Co., Chambersburg, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

SHAPERS

John Steptoe Co., 2960 Colerain Ave, Cincinnati, Ohio

SHEAVES

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Briggs Weaver Machinery Co., Dallas, Texas
A. & F. Brown Co., 79 Barclay St., New York, N. Y.
Continental Supply Co., St. Louis, Missouri
DeSoto Foundry & Machine Co., Mansfield, La.
Falls Clutch & Machinery Co., Cuyahoga Falls, Ohio.
Hartwell Iron Works, Houston, Texas
The Hill Clutch Machine & Foundry Co., Cleveland, Ohio
Jones, W. A., Foundry & Machine Co., 4415 W. Roosevelt Road, Chicago, Illinois
Mesta Machine Co., Pittsburgh, Pa.
Moloch Co., Kaukauna, Wis.
National Supply Co., Toledo, Ohio
Oil Well Supply Co., Pittsburgh, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Rogers Foundry & Machine, Joplin, Mo.
Standard Piping & Fittings Co., 30th and Race Sts., Philadelphia, Pa.
Union Engineering Co., Cleveland, Ohio.
Union Iron Works, Selma, Ala.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Weller Mfg. Co., 1820 N. Kostnor Ave., Chicago, Ill.
T. B. Wood's Sons Co., Chambersburg, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

SHEAVES, Rope

A. & F. Brown Co., 79 Barclay St., New York, N. Y.

SHEAVES, Swing Line

Oil Conservation Engineering Co., Cleveland, Ohio. See page 4.

SHELLAC

Arlington Paint & Varnish Co., 1329 Harrison Ave., S. W. Canton, Ohio.
Continental Products Co., Euclid, Ohio
Continental Supply Co., St. Louis, Missouri
Cook Paint & Varnish Co., North Kansas City, Mo. See page 7.
John Lucas Co., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
The Sherwin-Williams Co., 601 Canal Road, Cleveland, Ohio.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.

SHELVING, Metal

Baker Ice Machine Co., 3601 Evans St., Omaha, Nebr.
Berger Mfg. Co., Canton, Ohio
Brazelton, Wessendorff & Nelms, Houston, Texas
Cleveland Wire Spring Co., Cleveland, Ohio.
Dexter Metal Mfg. Co., 10 So. 18th St., Philadelphia, Pa.
Lyon Metallic Mfg. Co., Aurora, Ill.
Fred Medart Mfg. Co., 3535 DeKalb St., St. Louis, Mo.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Penn Metal Co., 675 Concord Ave., Cambridge, Mass.
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
Terrell's Equipment Co., Grand Rapids, Mich.
United Alloy Steel Corp., Canton, Ohio.
E. Van Noorden Co., 100 Magazine St. Roxbury, Mass.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

SHINGLES, Metallic

Berger Mfg. Co., Canton, Ohio
Peden Iron & Steel Co., Houston, Texas. See page 85.
Penn Metal Co., 675 Concord Ave., Cambridge, Mass.
United Alloy Steel Corp., Canton, Ohio.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

SHOCK ABSORBERS, Gage

Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Fort Worth Laboratories, 828½ Monroe St., Ft. Worth, Texas. See page 158.
Greene Brothers, Wichita Falls, Texas. See page 61.
Meriam Co., 8405 Detroit Ave., Cleveland, Ohio
Refinery Supply Co., Tulsa, Okla. See page 44.

SHOVELS

Briggs Weaver Machinery Co., Dallas, Texas
Continental Supply Co., St. Louis, Missouri
R. B. Everett Co., Houston, Texas.
F. W. Gartner Co., Houston, Texas.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
National Supply Co., Toledo, Ohio
Oil Well Supply Co., Pittsburgh, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

SHREDDERS

Jeffrey Mfg. Co., 904-99 No. Fourth St., Columbus, Ohio.

SIEVES, Testing

Fort Worth Laboratories, 828½ Monroe St., Ft. Worth, Texas
Peden Iron & Steel Co., Houston, Texas. See page 85.
Precision Scientific Co., 820 S. Tripp Ave., Chicago, Ill.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

SIGNS

Palm Brothers Decalcomania Co., Cincinnati, Ohio.

SKIMMERS, Boiler

Geo. B. Allen & Co., 510 Deere Bldg., Dallas, Texas. See page 150.

SKYLIGHTS

The American Cornice Wks. Co., 237-41 N. Water St., Wichita, Kansas
Fort Worth Steel & Machinery Co., Fort Worth, Texas
Peden Iron & Steel Co., Houston, Texas. See page 85.
Thorn, J. S. Co., 12th and Allegheny Ave., Philadelphia, Pa.
E. Van Noorden Co., 100 Magazine St. Roxbury, Mass.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

SOFTENERS, Water

Joe Barlow Distributor, Crodus and Taylor, Dallas, Texas
Butler Mfg. Co., 1124 Grand Ave., Kansas City, Mo.
Chicago Bridge & Iron Works, 37 Van Buren St., Chicago, Ill. See page 148.
The Cochrane Corp., 3130 N. 17th St., Philadelphia, Pa.
Dearborn Chemical Co., 310 S. Michigan Ave., Chicago, Ill.
Graver Corp., 414 Todd Ave., E. Chicago, Ind. See page 13.
Graver Corp., 414 Todd Ave., E. Chicago, Ind.
International Filter Co., 335 W. Twenty-Fifth Place, Chicago, Ill.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Lake Erie Mfg. Co., Inc., 192-198 Chicago St., Buffalo, N. Y.
H. A. Paine Co., 419-20 Cotton Exchange Bldg., Houston, Texas.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Power Plant Specialty Co., 440 S. Dearborn St., Chicago, Ill.
Wm. Scaife & Sons Co., Oakmont, Pa.
Sugar Beet Products Co., Saginaw, W. S. Mich.
Thermal Efficiency Co., 1210 Scarritt Bldg., Kansas City, Mo. See page 113.
Walworth Company, 88 Pearl St., Boston, Mass.

SOLDER
The Eagle-Picher Lead Co., 208 S. LaSalle St., Chicago, Ill.

SOLDER, Castings
Plouf Co., 170 Summer St., Boston, Mass.

SOLDERING, Supplies
Briggs Weaver Machinery Co., Dallas, Texas
Continental Supply Co., St. Louis, Missouri
Langstadt-Meyer Co., Appleton, Wis.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

SOLENOIDS
Electric Controller & Mfg. Co., 2700 E. Seventy-Ninth St., Cleveland, Ohio.

SPADES
Briggs Weaver Machinery Co., Dallas, Texas
Continental Supply Co., St. Louis, Missouri
F. W. Gartner Co., Houston, Texas.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
National Supply Co., Toledo, Ohio
Oil Well Supply Co., Pittsburgh, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

SPADERS, Clay, Compressed Air
Sullivan Machinery Co., 122 S. Michigan Ave., Chicago, Ill.

SPARK PLUGS
Stitt Ignition, Columbus, Ohio

SPECIALTIES, Steam
Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
Atlas Valve Co., 282 South St., Newark, N. J.
Boylston Steam Specialty Co., 116 W. Illinois St., Chicago, Ill.
Briggs Weaver Machinery Co., Dallas, Texas
A. W. Cash Co., 3rd & Eldorado Sts., Decatur, Ill.
Central Automatic Sprinkler Co., 5145 Delancey St., Philadelphia, Pa.
The Cochrane Corp., 3130 N. 17th St., Philadelphia, Pa.
Continental Supply Co., St. Louis, Missouri
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Greene Brothers, Wichita Falls, Texas. See page 61.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Kelley & Mueller, Inc., 34 W. Thirteenth St., New York, N. Y.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Lewis Steam Specialty & Valve Co., 5145 Delancey St., Philadelphia, Pa.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
McAlear Mfg. Co., 1901-07 Southwestern Ave., Chicago, Ill.
Midwest Piping & Supply Co., Second & Miller Sts., St. Louis, Mo. See page 41.
Milwaukee Steam Appliance Co., West Allis, Wis.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Perolin Co. of America, 1112 W. 37th St., Chicago, Illinois
Pitts & Kitts Mfg. & Supply Co., 91 7th Ave., New York, N. Y.
Plouff Co., 170 Summer St., Boston, Mass.
Star Brass Mfg. Co., 53 Oliver St., Boston, Mass.
Stickle Steam Specialties Co., Indianapolis, Ind.
Sweet & Doyle Foundry & Machine Co., Green Island, Troy, N. Y. See page 45.
Trane Co., LaCrosse, Wis.
Union Iron Works, Selma, Ala.
Watson & McDaniel Co., 146 N. Seventh St., Philadelphia, Pa.
D. T. Williams Valve Co., Spring Grove Ave., & Township St., Cincinnati, Ohio. See page 35.

SPECIAL EQUIPMENT
Advance Mfg. Co., Hamilton, Ohio.

SPECIFIC GRAVITY, Apparatus
Fort Worth Laboratories, 828½ Monroe St., Ft. Worth, Texas. See page 158.
Greene Brothers, Wichita Falls, Texas. See page 61.
Illinois Glass Co., Alton, Ill.
Maintenance Eng. Corp., 1802 Conti St., Houston, Texas. See page 150.
Refinery Supply Co., Tulsa, Okla. See page 44.
Taylor Instrument Co., Rochester, N. Y. See page 160.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

SPOT WELDERS, Electric
Henderson-Willis Welding & Cutting Co., 2305-09 N. Eleventh St., St. Louis, Mo.

SPRAYS, Paint
Acme Asbestos Cov. & Supply Co.,
The Alexander Milburn Co., 1416 W. Baltimore St., Baltimore, Md.
American Paint & Supply Co., Dallas, Texas
Arco Co., Cleveland, Ohio
Arlington Paint & Varnish Co., 1329 Harrison Ave., S. W. Canton, Ohio.
Binks Spray Equipment Co., 3114 Carroll Ave., Chicago, Ill.
Briggs Weaver Machinery Co., Dallas, Texas
Brunner Mfg. Co., Utica, N. Y.
Chicago Pneumatic Tool Co., 6 E. 44th St., New York, N. Y.
Continental Products Co., Euclid, Ohio
The Eclipse Paint & Mfg. Co., Cleveland, Ohio.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
John Lucas Co., Philadelphia, Pa.
MacLeod Company, Cincinnati, Ohio
W. N. Matthews Corp., 3714 Forrest Park Blvd., St. Louis, Mo. See page 8.
H. A. Paine Co., 419-20 Cotton Exchange Bldg., Houston, Texas.
Peden Iron & Steel Co., Houston, Texas. See page 85.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
The Sherwin-Williams Co., 601 Canal Road, Cleveland, Ohio.
Tennant Co., Union National Bank Bldg., Houston, Texas.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

SPRINGS
Cleveland Wire Spring Co., Cleveland, Ohio.
Continental Supply Co., St. Louis, Missouri
North American Car Co., 327 S. LaSalle St., Chicago, Ill. See page 156.
Peden Iron & Steel Co., Houston, Texas. See page 85.

SPRINGS, Car
North American Car Co., 327 S. LaSalle St., Chicago, Ill. See page 156.

SPRINKLERS
Briggs Weaver Machinery Co., Dallas, Texas
A. & F. Brown Co., 79 Barclay St., New York, N. Y.
Central Automatic Sprinkler Co., 5145 Delancey St., Philadelphia, Pa.
E. Leonard & Sons, Ltd., York St., London, Canada.
Lewis Steam Specialty & Valve Co., 5145 Delancey St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
John Simmons Co., 104-10 Center St., New York, N. Y.
Thompson Mfg. Co., Los Angeles, Calif.

SPRINKLERS, Automatic
Central Automatic Sprinkler Co., 5145 Delancey St., Philadelphia, Pa.

SPROCKETS
Briggs Weaver Machinery Co., Dallas, Texas
Colburn Gear & Mfg. Co., 98 Holmes St., Norfolk Downs, Mass.
Diamond Chain & Mfg. Co., 502 Kentucky Ave., Indianapolis, Ind.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Independent Foundry Co., 73 York St., Portland, Ore.
Jeffrey Mfg. Co., 904-99 No. Fourth St., Columbus, Ohio.
Moloch Co., Kaukauna, Wis.
Morse Chain Co., Ithaca, N. Y.
National Supply Co., Toledo, Ohio
Oil Well Supply Co., Pittsburgh, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Union Iron Works, Selma, Ala.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

STACKS, Smoke
American Chimney Corp., 147 Fourth Ave., New York, N. Y.
American Tank Co., Okla. City, Okla.
Brass Foundry & Machine Co., Fort Wayne, Ind.
The Brownell Co., Dayton, Ohio
Butler Mfg. Co., 1124 Grand Ave., Kansas City, Mo.
Chattanooga Boiler & Tank Co., Box 316, Chattanooga, Tenn.
Chicago Bridge & Iron Works, 37 Van Buren St., Chicago, Ill. See page 148.
Chicago Steel Car Co., Chicago, Ill. See page 141.
Columbian Steel Tank Co., 1401-1631 W. Twelfth St., Kansas City, Mo.
The Cullen Co., Clinton, Iowa
D. M. Dillon Steam Boiler Works, Fitchburg, Mass.
John Dollinger, Jr., Inc., Box 423, Beaumont, Texas
T. F. Downey Boiler Works, 2600-10 W. Grand Ave., Chicago, Ill.
Duff Patents Co., Inc., 321 Union Trust Bldg., Pittsburgh, Pa.
Erie City Iron Works, Erie, Pa.
Fort Worth Steel & Machinery Co., Fort Worth, Texas
Frost Mfg. Co., Galesburg, Ill.
A. D. Granger Co., 15 Park Row, New York, N. Y.
Graver Corp., 414 Todd Ave., E. Chicago, Ind. See page 13.
Hartwell Iron Works, Houston, Texas
Heine Boiler Co., St. Louis, Mo.
Jas. G. Heggie & Sons, Joliet, Ill.
Hendrick Mfg. Co., Carbondale, Pa.
Paul B. Huyette Co., Inc., 5 South Eighteenth St., Philadelphia, Pa.
Kansas City Structural Steel Co., Kansas City, Kansas.
E. Keeler Co., Williamsport, Pa.
Kittoe Boiler & Tank Co., Inc., 1307 Bank Pl., S. W., Canton, O.
L. O. Koven & Brother, Inc., 154 Ogden Ave., Jersey City, N.J.
E. Leonard & Sons, Ltd., York St., London, Canada.
McEwen Bros., Wellsville, N. Y.
Michelmann Steel Construction Co., Cor. of Second & Hampshire Sts., Quincy, Ill.
Milwaukee Reliance Boiler Works, Milwaukee, Wis.
Mosher Steel and Machinery Co., 900 S. Austin St., Dallas, Texas
R. S. Newbold & Son Co., Norristown, Pa.
Ocean Shore Iron Works, 550 Eighth St., San Francisco, Calif.
Petroleum Iron Works, Sharon, Pa.
Pioneer Tank & Boiler Co., Box 1926, Tulsa, Okla. See page 157.
Prospect Boiler Co., Ward St. and Raritan River R. R., New Brunswick, N. J.
Quaker City Iron Works, Richmond & Tioga Sts., Philadelphia, Pa.
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
Riter-Conley Co., Oliver Bldg., Pittsburgh, Pa.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Rust Engineering Co., 502 District National Bank Bldg., Washington, D. C.
Scharf Smoke Preventing Co., Ypsilant, Michigan.
The Stanwood Corp., Cincinnati, O.
M. H. Treadwell Co. of Ill., 208 S. La Salle St., Chicago, Ill.
Tulsa Boiler & Machinery Co., P. O. Box 1963, Tulsa, Okla.
The Union Iron Works, Erie, Pa.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

STACKS, Steel
Shevlin Engineering Co., Inc., 259 W. 34th St., New York, N. Y.

STAINS
The Sherwin-Williams Co., 601 Canal Road, Cleveland, Ohio.

STAIRS, Steel
E. Van Noorden Co., 100 Magazine St. Roxbury, Mass.

STANDS, Operating Floor
The Ludlow Valve Mfg. Co., R. A. Long Bldg., Kansas City, Mo. See page 93.

STARTERS, Electric Motor
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Briggs Weaver Machinery Co., Dallas, Texas
Columbian Steel Tank Co., 1401-1631 W. Twelfth St., Kansas City, Mo.
Electric Controller & Mfg. Co., 2700 E. Seventy-Ninth St., Cleveland, Ohio.
Fairbanks, Morse & Co., 900 S. Wabash Ave., Chicago, Ill.
Houston Armature Works, Houston, Texas
Southern Engine & Pump Co., Houston, Texas
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

STATIONS, Booster
The Bessemer Gas Engine Co., Grove City, Pa. See inside back cover.

STEEL
Allegheny Steel Co., Pittsburgh, Pa.
Andrews Steel Co., Neport, Ky.
Berger Mfg. Co., Canton, Ohio
Bethlehem Steel Co., Bethlehem, Pa.
Brazelton, Wessendorff & Nelms, Houston, Texas
Briggs Weaver Machinery Co., Dallas, Texas
Carnegie Steel Co., Carnegie Bldg., Pittsburgh, Pa.
Chicago Steel Car Co., Chicago, Ill. See page 141.
Colburn Gear & Mfg. Co., 98 Holmes St., Norfolk Downs, Mass.
Columbian Steel Tank Co., 1401-1631 W. Twelfth St., Kansas City, Mo.
John Dollinger, Jr., Inc., Box 423, Beaumont, Texas
Fort Worth Steel & Machinery Co., Fort Worth, Texas
Ellsworth Haning, 114-18 Liberty St., New York, N. Y.
Hartwell Iron Works, Houston, Texas
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Hughes Tool Co., 300 Hughes St., Houston, Texas. See insert.
Jones & Laughlin Steel Corp., Ross St., Pittsburgh, Pa.
Kansas City Structural Steel Co., Kansas City, Kansas.
Ludlum Steel Co., Watervliet, New York
Luken Steel Co., C. E. Naylor, Houston, Texas.
Mosher Steel and Machinery Co., 900 S. Austin St., Dallas, Texas
Peden Iron & Steel Co., Houston, Texas. See page 85.
A. R. Purdy Co., Inc., 790-4 Greenwich St., New York, N. Y.
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
Joseph T. Ryerson & Sons, 2558 W. 16th St., Chicago, Ill.
Texas Carnegie Steel Assn., Galveston, Texas.
Tulsa Boiler & Machinery Co., P. O. Box 1963, Tulsa, Okla.
United Alloy Steel Corp., Canton, Ohio.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Western Gas Construction Co., Fort Wayne, Ind.
Western Iron & Foundry Co., Wichita, Kansas. See page 89.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

The Youngstown Sheet & Tube Co., Youngstown, Ohio

STEEL, Carbon

Allegheny Steel Co., Pittsburgh, Pa.
Andrews Steel Co., Newport, Ky.
Atlas Steel Corp., Dunkirk, N. Y.
Berger Mfg. Co., Canton, Ohio
Bethlehem Steel Co., Bethlehem, Pa.
Brazelton, Wessendorff & Nelms, Houston, Texas.
Cyclops Steel Co., Titusville, Pa.
Ellsworth Haning, 114-18 Liberty St., New York, N. Y.
Hobson, Houghton & Co., 83 Beekman St., New York, N. Y.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Jones & Laughlin Steel Corp., Ross St., Pittsburgh, Pa.
Kansas City Structural Steel Co., Kansas City, Kansas.
Ludlum Steel Co., Watervliet, New York
Peden Iron & Steel Co., Houston, Texas. See page 85.
Philadelphia Steel & Iron Co., 1008 Commercial Trust Bldg., Philadelphia, Pa.
A. R. Purdy Co., Inc., 790-4 Greenwich St., New York, N. Y.
Joseph T. Ryerson & Sons, 2558 W. 16th St., Chicago, Ill.
United Alloy Steel Corp., Canton, Ohio.
Vanadium Alloys Steel Co., Latrobe, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

STEEL Cold Rolled

Berger Mfg. Co., Canton, Ohio
Bethlehem Steel Co., Bethlehem, Pa.
Briggs Weaver Machinery Co., Dallas, Texas
Jones & Laughlin Steel Corp., Ross St., Pittsburgh, Pa.
Kansas City Structural Steel Co., Kansas City, Kansas.
Mosher Steel and Machinery Co., 900 S. Austin St., Dallas, Texas
National Supply Co., Toledo, Ohio
Peden Iron & Steel Co., Houston, Texas. See page 85.
Philadelphia Steel & Iron Co., 1008 Commercial Trust Bldg., Philadelphia, Pa.
A. R. Purdy Co., Inc., 790-4 Greenwich St., New York, N. Y.
Joseph T. Ryerson & Sons, 2558 W. 16th St., Chicago, Ill.
Sculley Steel & Iron Co., Chicago, Ill.
Texas Belting Co., Houston, Texas.
Texas Carnegie Steel Assn., Galveston, Texas.
Union Iron Works, Selma, Ala.
United Alloy Steel Corp., Canton, Ohio.
Western Iron & Foundry Co., Wichita, Kansas. See page 89.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

STEEL EQUIPMENT, Office

Berger Mfg. Co., Canton, Ohio
Brazelton, Wessendorff & Nelms, Houston, Texas
Penn Metal Co., 675 Concord Ave., Cambridge, Mass.

STEEL, Fabricated Structural

Bethlehem Steel Co., Bethlehem, Pa.
Chattanooga Boiler & Tank Co., Box 316, Chattanooga, Tenn.
Chicago Steel Car Co., Chicago, Ill. See page 141.
John Dollinger, Jr., Inc., Box 423, Beaumont, Texas
Erie City Iron Works, Erie, Pa.
Finucane Boiler Works, Houston, Texas.
Fort Worth Steel & Machinery Co., Fort Worth, Texas
Harrisburg Pipe & Pipe Bending Co,. Houston, Texas
Hartwell Iron Works, Houston, Texas
Industrial Construction Company, Peoria Road, Tulsa, Okla.
Jones & Laughlin Steel Corp., Ross St., Pittsburgh, Pa.
Kansas City Structural Steel Co., Kansas City, Kansas.
McDougall & Potter Co., 141st & Rider Ave., New York, N. Y.
Moloch Co., Kaukauna, Wis.
Mosher Steel and Machinery Co., 900 S. Austin St., Dallas, Texas
Petroleum Iron Works, Sharon, Pa.
Philadelphia Steel & Iron Co., 1008 Commercial Trust Bldg., Philadelphia, Pa.
Pioneer Tank & Boiler Co., Box 1926, Tulsa, Okla. See page 157.
A. R. Purdy Co., Inc., 790-4 Greenwich St., New York, N. Y.
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
Riter-Conley Co., Oliver Bldg., Pittsburgh, Pa.
Robinson Ventilating Co., 517 House Bldg., Pittsburgh, Pa.
Tulsa Boiler & Machinery Co., P. O. Box 1963, Tulsa, Okla.
Union Iron Works, Selma, Ala.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Walsh & Weidner Boiler Co., Chattanooga, Tenn.
Western Gas Construction Co., Fort Wayne, Ind.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

STEEL, High Speed

Atlas Steel Corp., Dunkirk, N. Y.
Columbian Tool Steel Co., Chicago Heights, Ill.
Vanadium Alloys Steel Co., Latrobe, Pa.

STEEL PLATE, Construction

Babcock-Wilcox and Goldie-McCulloch, Ltd., Galt, Ontario, Canada
Bethlehem Steel Co., Bethlehem, Pa.
Biggs Boiler Works Co., Case Ave. and Newton St., Akron, Ohio
Brass Foundry & Machine Co., Fort Wayne, Ind.
Chattanooga Boiler & Tank Co., Box 316, Chattanooga, Tenn.
Chicago Bridge & Iron Works, 37 Van Buren St., Chicago, Ill. See page 148.
Chicago Sttel Car Co., Chicago, Ill. See page 141.
Columbian Steel Tank Co., 1401-1631 W. Twelfth St., Kansas City, Mo.
Coatesville Boiler Works, Coatsville, Pa.
The Cullen Co., Clinton, Iowa
D. M. Dillon Steam Boiler Works, Fitchburg, Mass.
John Dollinger, Jr., Inc., Box 423, Beaumont, Texas
T. F. Downey Boiler Works, 2600-10 W. Grand Ave., Chicago, Ill.
Duff Patents Co., Inc., 321 Union Trust Bldg., Pittsburgh, Pa.
Erie City Iron Works, Erie, Pa.
Finucane Boiler Works, Houston, Texas.
Fort Worth Steel & Machinery Co., Fort Worth, Texas
A. D. Granger Co., 15 Park Row, New York, N. Y.
Graver Corp., 414 Todd Ave., E. Chicago, Ind. See page 13.
Harrisburg Pipe & Pipe Bending Co,. Houston, Texas
Hartwell Iron Works, Houston, Texas
Heine Boiler Co., St. Louis, Mo.
Jones & Laughlin Steel Corp., Ross St., Pittsburgh, Pa.
Kansas City Structural Steel Co., Kansas City, Kansas.
The Kaw Boiler Works Co., Kansas City, Kans. See page 117.
E. Keeler Co., Williamsport, Pa.
Kittoe Boiler & Tank Co., Inc., 1307 Bank Pl., S. W., Canton, O.
L. O. Koven & Brother, Inc., 154 Ogden Ave., Jersey City, N.J.
Lancaster Iron Works, Inc., 560 So. Prince St., Lancaster, Pa.
Leader Iron Works, Decatur, Ill.
McAleenan Bros. Co., Twenty-fifth and Railroad, Pittsburgh, Pa.
McDougall & Potter Co., 141st & Rider Ave., New York, N. Y.
Moloch Co., Kaukauna, Wis.
Mosher Steel and Machinery Co., 900 S. Austin St., Dallas, Texas
Mount Cooper Boiler & Iron Co., Tulsa, Okla.
R. S. Newbold & Son Co., Norristown, Pa.
Newton Process Mfg. Co., Fullerton, California.
New York Engineering Co., 2 Rector St., New York, N. Y.
North American Car Co., 327 S. LaSalle St., Chicago, Ill. See page 156.
Ocean Shore Iron Works, 550 Eighth St., San Francisco, Calif.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Petroleum Iron Works, Sharon, Pa.
Pioneer Tank & Boiler Co., Box 1926, Tulsa, Okla. See page 157.
Prospect Boiler Co., Ward St. and Raritan River R. R., New Brunswick, N. J.
A. R. Purdy Co., Inc., 790-4 Greenwich St., New York, N. Y.
Quaker City Iron Works, Richmond & Tioga Sts., Philadelphia, Pa.
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
Riter-Conley Co., Oliver Bldg., Pittsburgh, Pa.
The Stanwood Corp., Cincinnati, O.
Thorn, J. S. Co., 12th and Allegheny Ave., Philadelphia, Pa.
M. H. Treadwell Co. of Ill., 208 S. La Salle St., Chicago, Ill.
Tulsa Boiler & Machinery Co., P. O. Box 1963, Tulsa, Okla.
Union Iron Works, Selma, Ala.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Henry Vogt Machine Co., Louisville, Ky. See page 5.
Western Gas Construction Co., Fort Wayne, Ind.
Western Iron & Foundry Co., Wichita, Kansas. See page 89.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

STEEL, Sheet

Allegheny Steel Co., Pittsburgh, Pa.
The Youngstown Sheet & Tube Co., Youngstown, Ohio

STEEL, Stainless or Rustless

United Alloy Steel Corp., Canton, Ohio.

STEEL, Structural

Bethlehem Steel Co., Bethlehem, Pa.
Carnegie Steel Co., Carnegie Bldg., Pittsburgh, Pa.
Chattanooga Boiler & Tank Co., Box 316, Chattanooga, Tenn.
Chicago Steel Car Co., Chicago, Ill. See page 141.
John Dollinger, Jr., Inc., Box 423, Beaumont, Texas
Eastern Steel Co., Pottsville, Pa.
Fort Worth Steel & Machinery Co., Fort Worth, Texas
Harrisburg Pipe & Pipe Bending Co,. Houston, Texas
Hartwell Iron Works, Houston, Texas
Heine Boiler Co., St. Louis, Mo.
Industrial Construction Company, Peoria Road, Tulsa, Okla.
Jones & Laughlin Steel Corp., Ross St., Pittsburgh, Pa.
Kansas City Structural Steel Co., Kansas City, Kansas.
Luken Steel Co., C. E. Naylor, Houston, Texas.
McDougall & Potter Co., 141st & Rider Ave., New York, N. Y.
Mosher Steel and Machinery Co., 900 S. Austin St., Dallas, Texas
North American Car Co., 327 S. LaSalle St., Chicago, Ill. See page 156.
Philadelphia Steel & Iron Co., 1008 Commercial Trust Bldg., Philadelphia, Pa.
Pioneer Tank & Boiler Co., Box 1926, Tulsa, Okla.
Pittsburgh-Des Moines Steel Co., 942 Curry Bldg., Pittsburgh, Pa.
A. R. Purdy Co., Inc., 790-4 Greenwich St., New York, N. Y.
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
Joseph T. Ryerson & Sons, 2558 W. 16th St., Chicago, Ill.
Sculley Steel & Iron Co., Chicago, Ill.
Union Iron Works, Selma, Ala.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Walsh & Weidner Boiler Co., Chattanooga, Tenn.
Western Gas Construction Co., Fort Wayne, Ind.
Western Iron & Foundry Co., Wichita, Kansas. See page 89.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

STEEL, Tool

Andrews Steel Co., Newport, Ky.
Atlas Steel Corp., Dunkirk, N. Y.
Berger Mfg. Co., Canton, Ohio
Bethlehem Steel Co., Bethlehem, Pa.
Brazelton, Wessendorff & Nelms, Houston, Texas
Briggs Weaver Machinery Co., Dallas, Texas
Colburn Gear & Mfg. Co., 98 Holmes St., Norfolk Downs, Mass.
Colonial Steel Co., 324 Fourth Ave., Pittsburgh, Pa.
Columbian Tool Steel Co., Chicago Heights, Ill.
Cyclops Steel Co., Titusville, Pa.
Ellsworth Haning, 114-18 Liberty St., New York, N. Y.
Hobson, Houghton & Co., 83 Beekman St., New York, N. Y.
Kansas City Structural Steel Co., Kansas City, Kansas.
Ludlum Steel Co., Watervliet, New York
Peden Iron & Steel Co., Houston, Texas. See page 85.
Philadelphia Steel & Iron Co., 1008 Commercial Trust Bldg., Philadelphia, Pa.
A. R. Purdy Co., Inc., 790-4 Greenwich St., New York, N. Y.
Joseph T. Ryerson & Sons, 2558 W. 16th St., Chicago, Ill.
Sculley Steel & Iron Co., Chicago, Ill.
Texas Carnegie Steel Assn., Galveston, Texas.
Union Iron Works, Selma, Ala.
Vanadium Alloys Steel Co., Latrobe, Pa.
Western Iron & Foundry Co., Wichita, Kansas. See page 89.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

STEELS, Alloy Tool

Vanadium Alloys Steel Co., Latrobe, Pa.

STEMS, Valve

Continental Supply Co., St. Louis, Missouri
Cyclops Steel Co., Titusville, Pa.
Gulf Coast Machine & Supply Co., Beaumont, Texas.
Harrisburg Pipe & Pipe Bending Co,. Houston, Texas
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Moloch Co., Kaukauna, Wis.
National Valve & Mfg. Co., 31st and Liberty, Pittsburgh, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Philadelphia Steel & Iron Co., 1008 Commercial Trust Bldg., Philadelphia, Pa.
Wm. Powell Co., Cincinnati, Ohio
Southern Brass Mfg. Co., Houston, Texas.
Henry Vogt Machine Co., Louisville, Ky. See page 5.
Walworth Company, 88 Pearl St., Boston, Mass.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

STICKS, Packing

Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.

STILLS

American Tank Co., Okla. City, Okla.
Babcock & Wilcox Co., 85 Liberty St., New York, N. Y.
E. B. Badger & Sons Co., 62-75 Pitts St., Boston, Mass.
Barnhart-Davis Co., Warren, Pa.
Blaw-Knox Co., Pittsburgh, Pa.
Casey-Hodges Mfg. Co., Chattanooga, Tenn.
Chattanooga Boiler & Tank Co., Box 316, Chattanooga, Tenn.
Chicago Bridge & Iron Works, 37 Van Buren St., Chicago, Ill. See page 148.
Chicago Steel Car Co., Chicago, Ill. See page 141.
J. P. Devine Co., 1380 Clinton, Buffalo, N. Y.
John Dollinger, Jr., Inc., Box 423, Beaumont, Texas
Ernest H. DuVivier, 30 Church St., New York, N. Y.
Finucane Boiler Works, Houston, Texas.
Fort Worth Steel & Machinery Co., Fort Worth, Texas
Graver Corp., 414 Todd Ave., E. Chicago, Ind. See page 13.
Kansas City Structural Steel Co., Kansas City, Kansas.
The Kaw Boiler Works Co., Kansas City, Kans. See page 117.
L. O. Koven & Brother, Inc., 154 Ogden Ave., Jersey City, N.J.
McAleenan Bros. Co., Twenty-fifth and Railroad, Pittsburgh, Pa.
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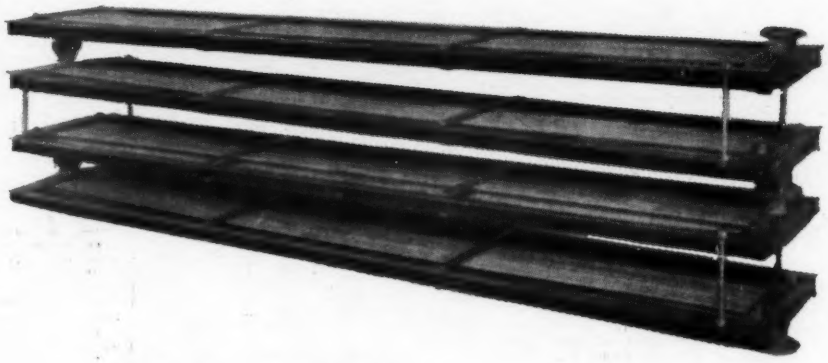

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North American Car Co., 327 S. LaSalle St., Chicago, Ill. See page 156.
Pennsylvania Boiler Works, 12th and Pa. Ave., Erie, Pa.
Petroleum Iron Works, Sharon, Pa.
Philadelphia Coppersmithing Co., 222 N. Front St., Philadelphia, Pa.
Pioneer Tank & Boiler Co., Box 1926, Tulsa, Okla. See page 157.
Pittsburgh-Des Moines Steel Co., 942 Curry Bldg., Pittsburgh, Pa.
Power Specialty Co., 111 Broadway, New York, N. Y. See page 16.
Precision Scientific Co., 820 S. Tripp Ave., Chicago, Ill.
Riter-Conley Co., Oliver Bldg., Pittsburgh, Pa.
Rust Engineering Co., 502 District National Bank Bldg., Washington, D. C.
Southwestern Engineering Co., Hollingsworth Bldg., Los Angeles, Cal. See page 109.
Sowers Mfg. Co., 1294 Niagara St., Buffalo, N. Y.
M. H. Treadwell Co. of Ill., 208 S. La Salle St., Chicago, Ill.
Tulsa Boiler & Machinery Co., P. O. Box 1963, Tulsa, Okla.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
The Widdell Engineering Co., 512 American Bk. Bldg., Kansas City, Mo.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

STILLS, Oil

Key Boiler & Equipment Co., 27th and McCasland, E. St. Louis, Ill.

STILLS, Oil Laboratory

C. J. Tagliabue Mfg. Co., 18 33rd St., Brooklyn, N. Y. See page 49.

STILLS, Pipe

Arthur G. McKee & Co., 2422 Euclid Ave., Cleveland, Ohio
The Widdell Engineering Co., 512 American Bk. Bldg., Kansas City, Mo.

STILLS, Pressure

American Tank Co., Okla. City, Okla.
Bethlehem Steel Co., Bethlehem, Pa.
Elaw-Knox Co., Pittsburgh, Pa.
Casey-Hodges Mfg. Co., Chattanooga, Tenn.
Chattanooga Boiler & Tank Co., Box 316, Chattanooga, Tenn.
Chicago Bridge & Iron Works, 37 Van Buren St., Chicago, Ill. See page 148.
Chicago Steel Car Co., Chicago, Ill. See page 141.
Cross Engineering Co., 700 Baltimore Ave., Kansas City, Mo. See page 129.
J. P. Devine Co., 1380 Clinton, Buffalo, N. Y.
John Dollinger, Jr., Inc., Box 423, Beaumont, Texas
Finucane Boiler Works, Houston, Texas.
Graver Corp., 414 Todd Ave., E. Chicago, Ind. See page 13.
Greene Brothers, Wichita Falls, Texas. See page 61.
Jas. G. Heggie & Sons, Joliet, Ill.
Heine Boiler Co., St. Louis, Mo.
Kansas City Structural Steel Co., Kansas City, Kansas.
Leader Iron Works, Decatur, Ill.
McAleenan Bros. Co., Twenty-fifth and Railroad, Pittsburgh, Pa.
McEwen Bros., Wellsville, N. Y.
Mount Cooper Boiler & Iron Co., Tulsa, Okla.
Newton Process Mfg. Co., Fullerton, California.
Petroleum Iron Works, Sharon, Pa.
Philadelphia Coppersmithing Co., 222 N. Front St., Philadelphia, Pa.
Pioneer Tank & Boiler Co., Box 1926, Tulsa, Okla. See page 157.
Power Specialty Co., 111 Broadway, New York, N. Y. See page 16.
Riter-Conley Co., Oliver Bldg., Pittsburgh, Pa.
Rust Engineering Co., 502 District National Bank Bldg., Washington, D. C.
Sowers Mfg. Co., 1294 Niagara St., Buffalo, N. Y.
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Tulsa Boiler & Machinery Co., P. O. Box 1963, Tulsa, Okla.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Henry Vogt Machine Co., Louisville, Ky. See page 5.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

STILLS, Steam

C. F. Braun & Co., Alhambra, Cal. See pages 78-79.
Casey-Hodges Mfg. Co., Chattanooga, Tenn.
Chattanooga Boiler & Tank Co., Box 316, Chattanooga, Tenn.
Chicago Steel Car Co., Chicago, Ill. See page 141.
Cross Engineering Co., 700 Baltimore Ave., Kansas City, Mo. See page 129.
J. P. Devine Co., 1380 Clinton, Buffalo, N. Y.
John Dollinger, Jr., Inc., Box 423, Beaumont, Texas
Finucane Boiler Works, Houston, Texas.
Dean E. Foster, New Wright Bldg., Tulsa, Okla.
Graver Corp., 414 Todd Ave., E. Chicago, Ind. See page 13.
Griscom-Russell Co., 285 Madison Ave., New York, N. Y. See page 133.
Kansas City Structural Steel Co., Kansas City, Kansas.
The Kaw Boiler Works Co., Kansas City, Kans. See page 117.
McAleenan Bros. Co., Twenty-fifth and Railroad, Pittsburgh, Pa.
McEwen Bros., Wellsville, N. Y.
Arthur G. McKee & Co., 2422 Euclid Ave., Cleveland, Ohio
Mosher Steel and Machinery Co., 900 S. Austin St., Dallas, Texas
Newton Process Mfg. Co., Fullerton, California.
Petroleum Iron Works, Sharon, Pa.
Philadelphia Coppersmithing Co., 222 N. Front St., Philadelphia, Pa.
Pioneer Tank & Boiler Co., Box 1926, Tulsa, Okla. See page 157.
Riter-Conley Co., Oliver Bldg., Pittsburgh, Pa.
Rust Engineering Co., 502 District National Bank Bldg., Washington, D. C.
Sowers Mfg. Co., 1294 Niagara St., Buffalo, N. Y.
The Superheater Co, 17 E. 42nd St., New York City, N. Y.
M. H. Treadwell Co. of Ill., 208 S. La Salle St., Chicago, Ill.
Tulsa Boiler & Machinery Co., P. O. Box 1963, Tulsa, Okla.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Henry Vogt Machine Co., Louisville, Ky. See page 5.
The Widdell Engineering Co., 512 American Bk. Bldg., Kansas City, Mo.
Winkler and Koch, 429 First National Bank, Wichita, Kansas. See page 109.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

STILLS, Tube

Winkler and Koch, 429 First National Bank, Wichita, Kansas. See page 109.

STILLS, Water

Fort Worth Laboratories, 828½ Monroe St., Ft. Worth, Texas. See page 158.
International Filter Co., 335 W. Twenty-Fifth Place, Chicago, Ill.
Jewell Polar Co., 9 S. Clinton St., Chicago, Ill.

STOCKS, Hand

Standard Engineering Co., Ellwood City, Pa.

STOCKS AND DIES

Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
Brazelton, Wessendorff & Nelms, Houston, Texas
Briggs Weaver Machinery Co., Dallas, Texas
Continental Supply Co., St. Louis, Missouri
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
National Supply Co., Toledo, Ohio
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
John Simmons Co., 104-10 Center St., New York, N. Y.
Toledo Pipe Threading Machine Co., 1445 Summit St., Toledo, O.
Walworth Company, 88 Pearl St., Boston, Mass.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

STOKERS

American Engineering Co., Philadelphia, Pa.
Babcock & Wilcox Co., 85 Liberty St., New York, N. Y.
Babcock-Wilcox and Goldie-McCulloch, Ltd., Galt, Ontario, Canada
Burke Engineering Co., Holland, Mich.
Erie City Iron Works, Erie, Pa.
Flynn & Emrich Co., N. E. Cor. Holliday & Saratoga Sts., Baltimore, Md.
Green Engineering Co., E. Chicago, Ind.
Marion Machine, Foundry & Supply Co., Box 685, Marion, Ind.
Moloch Co., Kaukauna, Wis.
Riley Stoker Corp., Worchester, Mass.
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Tennant Co., Union National Bank Bldg., Houston, Texas.
Vogt Brothers Mfg. Co., 1402 W. Main St., Louisville, Ky.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

STOPS, Limit

Electric Controller & Mfg. Co., 2700 E. Seventy-Ninth St., Cleveland, Ohio.

STOPPERS

Greene Brothers, Wichita Falls, Texas. See page 61.
Plouff Co., 170 Summer St., Boston, Mass.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

STOPPERS, Rubber

La Favorite Rubber Mfg. Co., Wagaraw Rd., Hawthorne, N. J.

STRAINERS, Air

Self Cleaning Strainer Co., 5125 S. Carpenter St., Chicago, Ill.
Sweet & Doyle Foundry & Machine Co., Green Island, Troy, N. Y. See page 45.

STRAINERS, Gas

Self Cleaning Strainer Co., 5125 S. Carpenter St., Chicago, Ill.

STRAINERS, Oil

Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
Bethlehem Shipbuilding Corp., Bethlehem, Pa.
C. F. Braun & Co., Alhambra, Cal. See pages 78-79.
Briggs Weaver Machinery Co., Dallas, Texas
A. W. Cash Co., 3rd & Eldorado Sts., Decatur, Ill.
J. P. Devine Co., 1380 Clinton, Buffalo, N. Y.
Elliott Company, Jeannette, Pa. See page 101.
Griscom-Russell Co., 285 Madison Ave., New York, N. Y. See page 133.
MacLeod Company, Cincinnati, Ohio
Maxon Premix Burner Co., Muncie, Ind.
Morse Dry Dock & Repair Co., Fuel Oil Engineering Dept., Foot 56th St., Brooklyn, N. Y
National Airoil Burner Co., 9th and Thompson Sts., Philadelphia, Pa. See page 20.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Peabody Engineering Corp., 110 E. Forty Second St., New York, N. Y.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Plouff Co., 170 Summer St., Boston, Mass.
Refineries Clay Co., 430 Story Bldg., Los Angeles, Calif.
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Sarco Co., Inc., 183 Madison Ave., New York, N. Y.
Schutte & Koerting Co., 1165 Thompson St., Philadelphia, Pa. See page 149.
Self Cleaning Strainer Co., 5125 S. Carpenter St., Chicago, Ill.
St. Louis Pump & Equipment Co., St. Louis, Mo.
Sweet & Doyle Foundry & Machine Co., Green Island, Troy, N. Y. See page 45.
Tennant Co., Union National Bank Bldg., Houston, Texas.
G. E. Witt Co., Inc., 862-64 Howard St., San Francisco, Calif.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

STRAINERS, Steam

Sweet & Doyle Foundry & Machine Co., Green Island, Troy, N. Y. See page 45.

STRAINERS, Water

Albany Steam Trap Co., 317-319 N. Pearl St., Albany, N. Y.
Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
C. F. Braun & Co., Alhambra, Cal. See pages 78-79.
Briggs Weaver Machinery Co., Dallas, Texas
A. W. Cash Co., 3rd & Eldorado Sts., Decatur, Ill.
The Cochrane Corp., 3130 N. 17th St., Philadelphia, Pa.
J. P. Devine Co., 1380 Clinton, Buffalo, N. Y.
C. A. Dunham Co., The Dunham Bldg., 450 E. Ohio St., Chicago, Illinois
Eliott Company, Jeannette, Pa. See page 101.
Griscom-Russell Co., 285 Madison Ave., New York, N. Y. See page 133.
Kelley & Mueller, Inc., 34 W. Thirteenth St., New York, N. Y.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Ohio Injector Co., S. Main St., Wadsworth, Ohio.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Plouff Co., 170 Summer St., Boston, Mass.
Refineries Clay Co., 430 Story Bldg., Los Angeles, Calif.
Ross Heater & Mfg. Co., Inc., Buffalo, N. Y.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Sarco Co., Inc., 183 Madison Ave., New York, N. Y.
Self Cleaning Strainer Co., 5125 S. Carpenter St., Chicago, Ill.
Sweet & Doyle Foundry & Machine Co., Green Island, Troy, N. Y. See page 45.
Walworth Company, 88 Pearl St., Boston, Mass.
G. E. Witt Co., Inc., 862-64 Howard St., San Francisco, Calif.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

STRIPS, Felt, Dustproofing

Booth Felt Co., Inc., 463-473 Nineteenth St., Brooklyn, N. Y.

STUDS, Metal

Briggs Weaver Machinery Co., Dallas, Texas
National Supply Co., Toledo, Ohio
Peden Iron & Steel Co., Houston, Texas. See page 85.
Penn Metal Co., 675 Concord Ave., Cambridge, Mass.
Henry Vogt Machine Co., Louisville, Ky. See page 5.

SUPPLIES, Drafting Room

Eugene Dietzgen Co., 162-166 W. Monroe St., Chicago, Ill.
W. & L. E. Gurley, Troy, N. Y.
Keuffel & Esser Co., Hoboken, N. J.
The C. F. Pease Co., 866 N. Franklin St., Chicago, Ill.

SUPPLIES, Engineering

Eugene Dietzgen Co., 162-166 W. Monroe St., Chicago, Ill.
Gilson Slide Rule Co., Niles, Mich.
Goetze Gasket & Packing Co., New Brunswick, N. J. See page 145.
W. & L. E. Gurley, Troy, N. Y.
Keuffel & Esser Co., Hoboken, N. J.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
The C. F. Pease Co., 866 N. Franklin St., Chicago, Ill.
Pitts & Kitts Mfg. & Supply Co., 91 7th Ave., New York, N. Y.

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Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

SUPPLIES, Welding

U. T. Hungerford Brass & Copper Co., 80 Lafayette St., New York, N. Y.
Smiths Inventions, Inc., 2636 Fourth St., S.E., Minneapolis, Minn.

SUPERHEATERS

Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
Babcock & Wilcox Co., 85 Liberty St., New York, N. Y.
Babcock-Wilcox and Goldie-McCulloch, Ltd., Galt, Ontario, Canada
The Badenhausen Corp., 1011 Chestnut St., Philadelphia, Pa.
Briggs Weaver Machinery Co., Dallas, Texas
Cross Engineering Co., 700 Baltimore Ave., Kansas City, Mo. See page 129.
J. P. Devine Co., 1380 Clinton, Buffalo, N. Y.
Power Specialty Co., 111 Broadway, New York, N. Y. See page 16.
Riter-Conley Co., Oliver Bldg., Pittsburgh, Pa.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Joseph T. Ryerson & Sons, 2558 W. 16th St., Chicago, Ill.
John Simmons Co., 104-10 Center St., New York, N. Y.
The Superheater Co, 17 E. 42nd St., New York City, N. Y.
Tennant Co., Union National Bank Bldg., Houston, Texas.
Whitlock Coil Pipe Co., Hartford, Conn.

SWING LINE, Equipment

Kansas City Structural Steel Co., Kansas City, Kansas.

SWITCHES, Flood

Electric Controller & Mfg. Co., 2700 E. Seventy-Ninth St., Cleveland, Ohio.

SWITCHES, Limit

Electric Tachometer Corp., 310 N. Eleventh St., Philadelphia, Pa.

SWITCHES, Pressure

Electric Controller & Mfg. Co., 2700 E. Seventy-Ninth St., Cleveland, Ohio.
Houston Armature Works, Houston, Texas
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Trane Co., LaCrosse, Wis.

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Briggs Weaver Machinery Co., Dallas, Texas
Carleton Mace Engr. Co., 244 Dover St., Boston, Mass.
General Electric Co., Schenectady, New York
Houston Armature Works, Houston, Texas
Langstadt-Meyer Co., Appleton, Wis.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

SWITCHBOARDS, Crane

Electric Controller & Mfg. Co., 2700 E. Seventy-Ninth St., Cleveland, Ohio.

SYPHONS

Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.

SYPHONS, Steam Jet

Briggs Weaver Machinery Co., Dallas, Texas
Continental Supply Co., St. Louis, Missouri
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Penberthy Injector Co., 340 Holden Ave., Detroit, Mich.
Schutte & Koerting Co., 1165 Thompson St., Philadelphia, Pa. See page 149.

Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

SYSTEMS, Heating & Ventilating

M. C. Carlisle & Co., Inc., 575 Albany St., Boston (18), Mass.

SYSTEMS—Oiling

Burt Mfg. Co., Akron, Ohio.

T

TABLES, Office

Lyon Metallic Mfg. Co., Aurora, Ill.

TACHOMETERS

American Schaeffer & Budenberg Corp., Berry & S. 5th St., Brooklyn, N. Y. See page 153.
James G. Biddle, 1211-1213 Arch St., Philadelphia, Pa.
Briggs Weaver Machinery Co., Dallas, Texas
The Bristol Co., Waterbury, Conn. See page 154.
Brown Instrument Co., 4537 Wayne Ave., Philadelphia, Pa.
Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Electric Tachometer Corp., 310 N. Eleventh St., Philadelphia, Pa.
The Esterline-Angus Co., P. O. Box 596, Indianapolis, Ind.
Greene Brothers, Wichita Falls, Texas. See page 61.
F. J. Low Co., Inc., 15 W. 44th St., New York, N. Y.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York, N.Y.
Refinery Supply Co., Tulsa, Okla. See page 44.
Carl H. Wagner, 1944 W. Albany Ave., Chicago, Ill.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

TANK CONNECTIONS, Lead Lined

United Lead Co., 111 Broadway, New York, N. Y.

TANKS

The Acme Tank Car Co., Coffeyville, Kansas
American Tank Co., Okla. City, Okla.
Babcock-Wilcox and Goldie-McCulloch, Ltd., Galt, Ontario, Canada
Biggs Boiler Works Co., Case Ave. and Newton St., Akron, Ohio
Black, Sivalls & Bryson, Bartlesville, Okla.
The Brady Conveyors Corp., 20 W. Jackson Blvd., Chicago, Ill.
Brass Foundry & Machine Co., Fort Wayne, Ind.
Butler Mfg. Co., 1124 Grand Ave., Kansas City, Mo.
Casey-Hodges Mfg. Co., Chattanooga, Tenn.
Chattanooga Boiler & Tank Co., Box 316, Chattanooga, Tenn.
Chicago Bridge & Iron Works, 37 Van Buren St., Chicago, Ill. See page 148.
Chicago Steel Car Co., Chicago, Ill. See page 141.
Columbian Steel Tank Co., 1401-1631 W. Twelfth St., Kansas City, Mo.
Continental Supply Co., St. Louis, Missouri
The Cullen Co., Clinton, Iowa
J. P. Devine Co., 1380 Clinton, Buffalo, N. Y.
D. M. Dillon Steam Boiler Works, Fitchburg, Mass.
John Dollinger, Jr., Inc., Box 423, Beaumont, Texas
T. F. Downey Boiler Works, 2600-10 W. Grand Ave., Chicago, Ill.
Eclipse Fuel Engineering Co., Rockford, Ill.
Erie City Iron Works, Erie, Pa.
Gilbert & Barker Mfg. Co., Springfield, Mass.
A. D. Granger Co., 15 Park Row, New York, N. Y.
Graver Corp., 414 Todd Ave., E. Chicago, Ind.
Hardinge Co., Inc., York, Pa.
Hartwell Iron Works, Houston, Texas
Heine Boiler Co., St. Louis, Mo.
Hendrick Mfg. Co., Carbondale, Pa.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Kansas City Structural Steel Co., Kansas City, Kansas.
The Kaw Boiler Works Co., Kansas City, Kansas. See page 117.
Kewanee Boiler Co., Kewanee, Ill.
Kittoe Boiler & Tank Co., Inc., 1307 Bank Pl., S. W., Canton, O.
L. O. Koven & Brother, Inc., 154 Ogden Ave., Jersey City, N.J.
Lancaster Iron Works, Inc., 560 So. Prince St., Lancaster, Pa.
E. Leonard & Sons, Ltd., York St., London, Canada.
M. & V. Tank Company, Wichita Falls, Texas.
Maloney Tank Mfg. Company, Tulsa, Oklahoma.
McEwen Bros., Wellsville, N. Y.
McNamar Boiler Works, Bridgeport, Ill.
Michelmann Steel Construction Co., Cor. of Second & Hampshire Quincy, Ill.
Milwaukee Reliance Boiler Works, Milwaukee, Wis.
Morrison Bros., Dubuque, Iowa.
Mosher Steel and Machinery Co., 900 S. Austin St., Dallas, Texas
Mount Cooper Boiler & Iron Co., Tulsa, Okla.
New York Engineering Co., 2 Rector St., New York, N. Y.
R. S. Newbold & Son Co., Norristown, Pa.
Newton Process Mfg. Co., Fullerton, California.
North American Car Co., 327 S. LaSalle St., Chicago, Ill. See page 156.
Ocean Shore Iron Works, 550 Eighth St., San Francisco, Calif.
Oil Well Supply Co., Pittsburgh, Pa.
Oswego Boiler & Engine Co., Oswego, N. Y.
Parkersburg Rig & Reel Co., Parkersburg, West Virginia.
Pennsylvania Boiler Works, 12th and Pa. Ave., Erie, Pa.
Petroleum Iron Works, Sharon, Pa.
Pioneer Tank & Boiler Co., Box 1926, Tulsa, Okla. See page 157.
Prospect Boiler Co., Ward St. and Raritan River R. R., New Brunswick, N. J.
Quaker City Iron Works, Richmond & Tioga Sts., Philadelphia, Pa.
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
Riter-Conley Co., Oliver Bldg., Pittsburgh, Pa.
Wm. Scaife & Sons Co., Oakmont, Pa.
Shevlin Engineering Co., Inc., 259 W. 34th St., New York, N. Y.
John Simmons Co., 104-10 Center St., New York, N. Y.
The Stanwood Corp., Cincinnati, O.
Steel Tank & Products Corp., 26 N. Jefferson St., Chicago, Ill.
Titusville Iron Works, Titusville, Pa.
M. H. Treadwell Co. of Ill., 208 S. LaSalle St., Chicago, Ill.
Turner Oil Filter Co., Niles, Mich.
Tulsa Boiler & Machinery Co., P. O. Box 1963, Tulsa, Okla.
The Union Iron Works, Erie, Pa.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
E. Van Noorden Co., 100 Magazine St. Roxbury, Mass.
Walsh & Weidner Boiler Co., Chattanooga, Tenn.
Western Gas Construction Co., Fort Wayne, Ind.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

TANKS, Accumulator

American Tank Co., Okla. City, Okla.
Armstrong Machinery Co., 3201-19 E. Riverside, Spokane, Wash.
C. F. Braun & Co., Alhambra, Cal. See pages 78-79.
Casey-Hodges Mfg. Co., Chattanooga, Tenn.
Chattanooga Boiler & Tank Co., Box 316, Chattanooga, Tenn.
Chicago Bridge & Iron Works, 37 Van Buren St., Chicago, Ill. See page 148.
Chicago Steel Car Co., Chicago, Ill. See page 141.
Columbian Steel Tank Co., 1401-1631 W. Twelfth St., Kansas City, Mo.
J. P. Devine Co., 1380 Clinton. Buffalo, N. Y.
Duff Patents Co., Inc., 321 Union Trust Bldg., Pittsburgh, Pa.
Erie City Iron Works, Erie, Pa.
Fort Worth Steel & Machinery Co., Fort Worth, Texas
Graver Corp., 414 Todd Ave., E. Chicago, Ind. See page 13.
Kansas City Structural Steel Co., Kansas City, Kansas.
The Kaw Boiler Works Co., Kansas City, Kansas. See page 117.
L. O. Koven & Brother, Inc., 154 Ogden Ave., Jersey City, N.J.
E. Leonard & Sons, Ltd., York St., London, Canada.
McEwen Bros., Wellsville, N. Y.
McNamar Boiler Works, Bridgeport, Ill.
Milwaukee Boiler Mfg. Co., 35th St. & National Ave., Milwaukee, Wis.
Mosher Steel and Machinery Co., 900 S. Austin St., Dallas, Texas
Mount Cooper Boiler & Iron Co., Tulsa, Okla.
New York Engineering Co., 2 Rector St., New York, N. Y.
R. S. Newbold & Son Co., Norristown, Pa.
Oil Well Supply Co., Pittsburgh, Pa.
Oswego Boiler & Engine Co., Oswego, N. Y.
Petroleum Iron Works, Sharon, Pa.
Pioneer Tank & Boiler Co., Box 1926, Tulsa, Okla. See page 157.
Quaker City Iron Works, Richmond & Tioga Sts., Philadelphia, Pa.
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
Riter-Conley Co., Oliver Bldg., Pittsburgh, Pa.
M. H. Treadwell Co. of Ill., 208 S. La Salle St., Chicago, Ill.
Tulsa Boiler & Machinery Co., P. O. Box 1963, Tulsa, Okla.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Walsh & Weidner Boiler Co., Chattanooga, Tenn.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

TANKS, Acid

Casey-Hodges Mfg. Co., Chattanooga, Tenn.
Chattanooga Boiler & Tank Co., Box 316, Chattanooga, Tenn.
Chicago Bridge & Iron Works, 37 Van Buren St., Chicago, Ill. See page 148.
Chicago Steel Car Co., Chicago, Ill. See page 141.
Columbian Steel Tank Co., 1401-1631 W. Twelfth St., Kansas City, Mo.
J. P. Devine Co., 1380 Clinton, Buffalo, N. Y.
John Dollinger, Jr., Inc., Box 423, Beaumont, Texas
Duff Patents Co., Inc., 321 Union Trust Bldg., Pittsburgh, Pa.
Erie City Iron Works, Erie, Pa.
Fort Worth Steel & Machinery Co., Fort Worth, Texas
Graver Corp., 414 Todd Ave., E. Chicago, Ind. See page 13.
Hartwell Iron Works, Houston, Texas
Jas. G. Heggie & Sons, Joliet, Ill.
Heine Boiler Co., St. Louis, Mo.
Kansas City Structural Steel Co., Kansas City, Kansas.
The Kaw Boiler Works Co., Kansas City, Kansas. See page 117.
Kittoe Boiler & Tank Co., Inc., 1307 Bank Pl., S. W., Canton, O.
L. O. Koven & Brother, Inc., 154 Ogden Ave., Jersey City, N.J.
E. Leonard & Sons, Ltd., York St., London, Canada.
Milwaukee Boiler Mfg. Co., 35th St. & National Ave., Milwaukee, Wis.
Mount Cooper Boiler & Iron Co., Tulsa, Okla.
Petroleum Iron Works, Sharon, Pa.
Pioneer Tank & Boiler Co., Box 1926, Tulsa, Okla. See page 157.
Prospect Boiler Co., Ward St. and Raritan River R. R., New Brunswick, N. J.
Quaker City Iron Works, Richmond & Tioga Sts., Philadelphia, Pa.
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
Riter-Conley Co., Oliver Bldg., Pittsburgh, Pa.
John Simmons Co., 104-10 Center St., New York, N. Y.
Steel Tank & Products Corp., 26 N. Jefferson St., Chicago, Ill.
M. H. Treadwell Co. of Ill., 208 S. La Salle St., Chicago, Ill.
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United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Western Gas Construction Co., Fort Wayne, Ind.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

TANKS, Acid, Rubber Covered
La Favorite Rubber Mfg. Co., Wagaraw Rd., Hawthorne, N. J.

TANKS, Agitators
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Arctic Ice Machine Co., Canton, Ohio
Casey-Hodges Mfg. Co., Chattanooga, Tenn.
Chattanooga Boiler & Tank Co., Box 316, Chattanooga, Tenn.
Chicago Bridge & Iron Works, 37 Van Buren St., Chicago, Ill. See page 148.
Chicago Steel Car Co., Chicago, Ill. See page 141.
Columbian Steel Tank Co., 1401-1631 W. Twelfth St., Kansas City, Mo.
J. P. Devine Co., 1380 Clinton, Buffalo, N. Y.
John Dollinger, Jr., Inc., Box 423, Beaumont, Texas
Erie City Iron Works, Erie, Pa.
Fort Worth Steel & Machinery Co., Fort Worth, Texas
Graver Corp., 414 Todd Ave., E. Chicago, Ind. See page 13.
Kansas City Structural Steel Co., Kansas City, Kansas.
The Kaw Boiler Works Co., Kansas City, Kansas. See page 117.
L. O. Koven & Brother, Inc., 154 Ogden Ave., Jersey City, N.J.
E. Leonard & Sons, Ltd., York St., London, Canada.
McAleenan Bros. Co., Twenty-fifth and Railroad, Pittsburgh, Pa.
McEwen Bros., Wellsville, N. Y.
Milwaukee Boiler Mfg. Co., 35th St. & National Ave., Milwaukee, Wis.
Mosher Steel and Machinery Co., 900 S. Austin St., Dallas, Texas
Mount Cooper Boiler & Iron Co., Tulsa, Okla.
New York Engineering Co., 2 Rector St., New York, N. Y.
Oswego Boiler & Engine Co., Oswego, N. Y.
Petroleum Iron Works, Sharon, Pa.
Quaker City Iron Works, Richmond and Tioga Sts., Philadelphia, Pa.
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
Riter-Conley Co., Oliver Bldg., Pittsburgh, Pa.
St. Louis Pump & Equipment Co., St. Louis, Mo.
M. H. Treadwell Co. of Ill., 208 S. La Salle St., Chicago, Ill.
Tulsa Boiler & Machinery Co., P. O. Box 1963, Tulsa, Okla.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Walsh & Weidner Boiler Co., Chattanooga, Tenn.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

TANKS, Air
The Bessemer Gas Engine Co., Grove City, Pa. See inside back cover.

TANKS, Compression
American Gas Construction Co., Newton, Iowa
The Brownell Co., Dayton, Ohio
Casey-Hodges Mfg. Co., Chattanooga, Tenn.
Chattanooga Boiler & Tank Co., Box 316, Chattanooga, Tenn.
Chicago Bridge & Iron Works, 37 Van Buren St., Chicago, Ill. See page 148.
Chicago Steel Car Co., Chicago, Ill. See page 141.
Columbian Steel Tank Co., 1401-1631 W. Twelfth St., Kansas City, Mo.
Continental Supply Co., St. Louis, Missouri
J. P. Devine Co., 1380 Clinton, Buffalo, N. Y.
Erie City Iron Works, Erie, Pa.
Fort Worth Steel & Machinery Co., Fort Worth, Texas
Graver Corp., 414 Todd Ave., E. Chicago, Ind. See page 13.
Hartwell Iron Works, Houston, Texas
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Kansas City Structural Steel Co., Kansas City, Kansas.
The Kaw Boiler Works Co., Kansas City, Kansas. See page 117.
Kewanee Boiler Co., Kewanee, Ill.
E. Leonard & Sons, Ltd., York St., London, Canada.
McEwen Bros., Wellsville, N. Y.
McNamar Boiler Works, Bridgeport, Ill.
Milwaukee Boiler Mfg. Co., 35th St. & National Ave., Milwaukee, Wis.
Mount Cooper Boiler & Iron Co., Tulsa, Okla.
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Petroleum Iron Works, Sharon, Pa.
Prospect Boiler Co., Ward St. and Raritan River R. R., New Brunswick, N. J.
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Riter-Conley Co., Oliver Bldg., Pittsburgh, Pa.
Wm. Scaife & Sons Co., Oakmont, Pa.
Steel Tank & Products Corp., 26 N. Jefferson St., Chicago, Ill.
M. H. Treadwell Co. of Ill., 208 S. La Salle St., Chicago, Ill.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Walsh & Weidner Boiler Co., Chattanooga, Tenn.
Western Gas Construction Co., Fort Wayne, Ind.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

TANKS, Copper
Jewell Polar Co., 9 S. Clinton St., Chicago, Ill.
Geo. A. Weld & Co., 80 Federal St., Boston, Mass.

TANKS, Elevated
Chicago Bridge & Iron Works, 37 Van Buren St., Chicago, Ill. See page 148.
Pittsburgh-Des Moines Steel Co., 942 Curry Bldg., Pittsburgh, Pa.

TANKS, Lead Lined
United Lead Co., 111 Broadway, New York, N. Y.

TANKS, Pressure
American Tank Co., Okla. City, Okla.
Babcock-Wilcox and Goldie-McCulloch, Ltd., Galt, Ontario, Canada
Black, Sivalls & Bryson, Bartlesville, Okla.
Brass Foundry & Machine Co., Fort Wayne, Ind.
The Brownell Co., Dayton, Ohio
Butler Mfg. Co., 1124 Grand Ave., Kansas City, Mo.
Casey-Hodges Mfg. Co., Chattanooga, Tenn.
Chattanooga Boiler & Tank Co., Box 316, Chattanooga, Tenn.
Chicago Bridge & Iron Works, 37 Van Buren St., Chicago, Ill. See page 148.
Chicago Steel Car Co., Chicago, Ill. See page 141.
Columbian Steel Tank Co., 1401-1631 W. Twelfth St., Kansas City, Mo.
The Cullen Co., Clinton, Iowa
J. P. Devine Co., 1380 Clinton, Buffalo, N. Y.
D. M. Dillon Steam Boiler Works, Fitchburg, Mass.
John Dollinger, Jr., Inc., Box 423, Beaumont, Texas
Duff Patents Co., Inc., 321 Union Trust Bldg., Pittsburgh, Pa.
Erie City Iron Works, Erie, Pa.
Fort Worth Steel & Machinery Co., Fort Worth, Texas
Frost Mfg. Co., Galesburg, Ill.
Graver Corp., 414 Todd Ave., E. Chicago, Ind. See page 13.
Hartwell Iron Works, Houston, Texas
Jas. G. Heggie & Sons, Joliet, Ill.
Heine Boiler Co., St. Louis, Mo.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Kansas City Structural Steel Co., Kansas City, Kansas.
The Kaw Boiler Works Co., Kansas City, Kansas. See page 117.
Kewanee Boiler Co., Kewanee, Ill.
Kittoe Boiler & Tank Co., Inc., 1307 Bank Pl., S. W., Canton, O.
E. Leonard & Sons, Ltd., York St., London, Canada.
McAleenan Bros. Co., Twenty-fifth and Railroad, Pittsburgh, Pa.
McEwen Bros., Wellsville, N. Y.
McNamar Boiler Works, Bridgeport, Ill.
Milwaukee Boiler Mfg. Co., 35th St. & National Ave., Milwaukee, Wis.
Milwaukee Reliance Boiler Works, Milwaukee, Wis.
Mount Cooper Boiler & Iron Co., Tulsa, Okla.
Nagle Engine & Boiler Works, Erie, Pa.
New York Engineering Co., 2 Rector St., New York, N. Y.
R. S. Newbold & Son Co., Norristown, Pa.
Ocean Shore Iron Works, 550 Eighth St., San Francisco, Calif.
Oswego Boiler & Engine Co., Oswego, N. Y.
Pennsylvania Boiler Works, 12th and Pa. Ave., Erie, Pa.
Petroleum Iron Works, Sharon, Pa.
Pioneer Tank & Boiler Co., Box 1926, Tulsa, Okla. See page 157.
Prospect Boiler Co., Ward St. and Raritan River R. R., New Brunswick, N. J.
Quaker City Iron Works, Richmond & Tioga Sts., Philadelphia, Pa.
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
Riter-Conley Co., Oliver Bldg., Pittsburgh, Pa.
Wm. Scaife & Sons Co., Oakmont, Pa.
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
Sims Co., Erie, Pa.
Southern Engine & Pump Co., Houston, Texas
Steel Tank & Products Corp., 26 N. Jefferson St., Chicago, Ill.
Titusville Iron Works Co., Titusville, Pa.
M. H. Treadwell Co. of Ill., 208 S. La Salle St., Chicago, Ill.
Tulsa Boiler & Machinery Co., P. O. Box 1963, Tulsa, Okla.
The Union Iron Works, Erie, Pa.
Union Iron Works, Selma, Ala.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
C. J. Walton & Son, 1221 W. Main St., Louisville, Ky.
Walsh & Weidner Boiler Co., Chattanooga, Tenn.
Walworth Company, 88 Pearl St Boston, Mass.
Geo. A. Weld & Co., 80 Federal St., Boston, Mass.
Western Gas Construction Co., Fort Wayne, Ind.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

TANKS, Run Down
American Tank Co., Okla. City, Okla.
Black, Sivalls & Bryson, Bartlesville, Okla.
Butler Mfg. Co., 1124 Grand Ave., Kansas City, Mo.
Chattanooga Boiler & Tank Co., Box 316, Chattanooga, Tenn.
Chicago Bridge & Iron Works, 37 Van Buren St., Chicago, Ill. See page 148.
Chicago Steel Car Co., Chicago, Ill. See page 141.
Columbian Steel Tank Co., 1401-1631 W. Twelfth St., Kansas City, Mo.
The Cullen Co., Clinton, Iowa
J. P. Devine Co., 1380 Clinton, Buffalo, N. Y.
Erie City Iron Works, Erie, Pa.
Fort Worth Steel & Machinery Co., Fort Worth, Texas
Graver Corp., 414 Todd Ave., E. Chicago, Ind. See page 13.
Hartwell Iron Works, Houston, Texas
Jas. G. Heggie & Sons, Joliet, Ill.
Kansas City Structural Steel Co., Kansas City, Kansas.
The Kaw Boiler Works Co., Kansas City, Kansas. See page 117.
E. Leonard & Sons, Ltd., York St., London, Canada.
McNamar Boiler Works, Bridgeport, Ill.
Milwaukee Boiler Mfg. Co., 35th St. & National Ave., Milwaukee, Wis.
Mosher Steel and Machinery Co., 900 S. Austin St., Dallas, Texas
Mount Cooper Boiler & Iron Co., Tulsa, Okla.
New York Engineering Co., 2 Rector St., New York, N. Y.
Petroleum Iron Works, Sharon, Pa.
Pioneer Tank & Boiler Co., Box 1926, Tulsa, Okla. See page 157.
Quaker City Iron Works, Richmond & Tioga Sts., Philadelphia, Pa.
Riter-Conley Co., Oliver Bldg., Pittsburgh, Pa.
M. H. Treadwell Co. of Ill., 208 S. La Salle St., Chicago, Ill.
Tulsa Boiler & Machinery Co., P. O. Box 1963, Tulsa, Okla.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Walsh & Weidner Boiler Co., Chattanooga, Tenn.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

TANKS, Steel, Elevated
Southern Engine & Pump Co., Houston, Texas

TANKS, Storage
American Gas Construction Co., Newton, Iowa
American Tank Co., Okla. City, Okla.
Armstrong Machinery Co., 3201-19 E. Riverside, Spokane, Wash.
Babcock-Wilcox and Goldie-McCulloch, Ltd., Galt, Ontario, Canada
Black, Sivalls & Bryson, Bartlesville, Okla.
The Brady Conveyors Corp., 20 W. Jackson Blvd., Chicago, Ill.
Brass Foundry & Machine Co., Fort Wayne, Ind.
Butler Mfg. Co., 1124 Grand Ave., Kansas City, Mo.
Casey-Hodges Mfg. Co., Chattanooga, Tenn.
Chattanooga Boiler & Tank Co., Box 316, Chattanooga, Tenn.
Chicago Bridge & Iron Works, 37 Van Buren St., Chicago, Ill. See page 148.
Chicago Steel Car Co., Chicago, Ill. See page 141.
Columbian Steel Tank Co., 1401-1631 W. Twelfth St., Kansas City, Mo.
Continental Supply Co., St. Louis, Missouri
The Cullen Co., Clinton, Iowa
J. P. Devine Co., 1380 Clinton, Buffalo, N. Y.
D. M. Dillon Steam Boiler Works, Fitchburg, Mass.
John Dollinger, Jr., Inc., Box 423, Beaumont, Texas
Duff Patents Co., Inc., 321 Union Trust Bldg., Pittsburgh, Pa.
Erie City Iron Works, Erie, Pa.
Fort Worth Steel & Machinery Co., Fort Worth, Texas
Gilbert & Barker Mfg. Co., Springfield, Mass.
Graver Corp., 414 Todd Ave., E. Chicago, Ind. See page 13.
Hartwell Iron Works, Houston, Texas
Jas. G. Heggie & Sons, Joliet, Ill.
Heine Boiler Co., St. Louis, Mo.
Jewell Polar Co., 9 S. Clinton St., Chicago, Ill.
Kansas City Structural Steel Co., Kansas City, Kansas.
The Kaw Boiler Works Co., Kansas City, Kansas. See page 117.
Kewanee Boiler Co., Kewanee, Ill.
Kittoe Boiler & Tank Co., Inc., 1307 Bank Pl., S. W., Canton, O.
L. O. Koven & Brother, Inc., 154 Ogden Ave., Jersey City, N.J.
E. Leonard & Sons, Ltd., York St., London, Canada.
McEwen Bros., Wellsville, N. Y.
McNamar Boiler Works, Bridge-
Milwaukee Boiler Mfg. Co., 35th St. & National Ave., Milwaukee, Wis.
Milwaukee Reliance Boiler Works, Milwaukee, Wis.
Moncrief Lenoir Mfg., Co., Houston, Texas
Mosher Steel and Machinery Co., 900 S. Austin St., Dallas, Texas
Mount Cooper Boiler & Iron Co., Tulsa, Okla.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
New York Engineering Co., 2 Rector St., New York, N. Y.
R. S. Newbold & Son Co., Norristown, Pa.
Ocean Shore Iron Works, 550 Eighth St., San Francisco, Calif.
Oil Well Supply Co., Pittsburgh, Pa.
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Petroleum Iron Works, Sharon, Pa.
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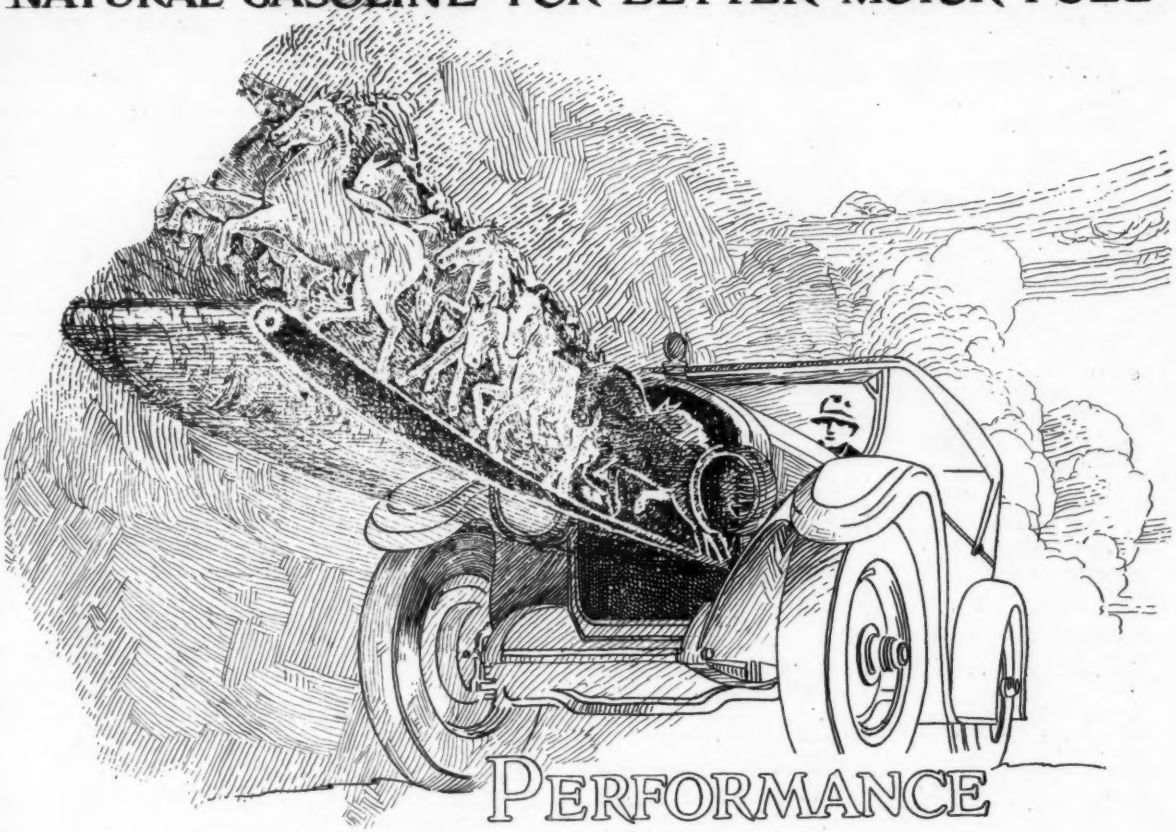

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Steel Tank & Products Corp., 26 N. Jefferson St., Chicago, Ill.
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United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Walsh & Weidner Boiler Co., Chattanooga, Tenn.
C. J. Walton & Son, 1221 W. Main St., Louisville, Ky.
Walworth Company, 88 Pearl St., Boston, Mass.
Geo. A. Weld & Co., 80 Federal St., Boston, Mass.
Western Gas Construction Co., Fort Wayne, Ind.
The Youngstown Boiler & Tank Co., Youngstown, Ohio

TANKS, Tile Storage

The Brady Conveyors Corp., 20 W. Jackson Blvd., Chicago, Ill.

TANKS, Truck

Quaker City Iron Works, Richmond & Tioga Sts., Philadelphia, Pa.

TANKS, Welded

Black, Sivalls & Bryson, Bartlesville, Okla.

TAPES, Measuring

Abbott-McKay Corp., 21 Pearl St., Boston, Mass.
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Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
Continental Supply Co., St. Louis, Missouri
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Eugene Dietzgen Co., 162-166 W. Monroe St., Chicago, Ill.
Duff Patents Co., Inc., 321 Union Trust Bldg., Pittsburgh, Pa.
Greene Brothers, Wichita Falls, Texas. See page 61.
Keuffel & Esser Co., Hoboken, N. J.
Kolesch & Co., 138 Fulton St., New York, N. Y.
E. Leonard & Sons, Ltd., York St., London, Canada.
The Lufkin Rule Company, Saginaw, Michigan.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
The C. F. Pease Co., 866 N. Franklin St., Chicago, Ill.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Quaker City Iron Works, Richmond & Tioga Sts., Philadelphia, Pa.
Refinery Supply Co., Tulsa, Okla. See page 44.
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
Riter-Conley Co., Oliver Bldg., Pittsburgh, Pa.
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
The L. S. Starrett Co., Athol, Mass.
Williams, Brown & Earle, 918 Chestnut St., Philadelphia, Pa. See page 149
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

TAPS

Brazelton, Wessendorff & Nelms, Houston, Texas
Briggs Weaver Machinery Co., Dallas, Texas
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Fort Worth Laboratories, 828½ Monroe St., Ft. Worth, Texas. See page 158.
Greenfield Tap & Die Corp'n., Greenfield, Mass.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
National Supply Co., Toledo, Ohio
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Sculley Steel & Iron Co., Chicago, Ill.
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
John Simmons Co., 104-10 Center St., New York, N. Y.
Walworth Company, 88 Pearl St., Boston, Mass.

TESTERS (See Scientific Instruments)

American Schaeffer & Budenberg Corp., Berry & S. 5th St., Brooklyn, N. Y. See page 153.
Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Fort Worth Laboratories, 828½ Monroe St., Ft. Worth, Texas. See page 158.
Greene Brothers, Wichita Falls, Texas. See page 61.
Illinois Glass Co., Alton, Ill.
F. J. Low Co., Inc., 15 W. 44th St., New York, N. Y.
Maintenance Eng. Corp., 1802 Conti St., Houston, Texas. See page 150.
Refinery Supply Co., Tulsa, Okla. See page 44.
C. J. Tagliabue Mfg. Co., 18 33rd St., Brooklyn, N. Y. See page 49.
Taylor Instrument Co., Rochester, N. Y. See page 160.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

TESTERS, Safety Valve

General American Tank Car Corp., 940 Illinois Merc. Bank Bldg., Chicago, Ill. See page 145.

THERMO-COMPRESSORS, Steam Jet

Schutte & Koerting Co., 1165 Thompson St., Philadelphia, Pa. See page 149.

THERMO-COUPLES

The Bristol Co., Waterbury, Conn. See page 154.
Brown Instrument Co., 4537 Wayne Ave., Philadelphia, Pa.
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Defender Automatic Regulator Co., 709 Pine St., St. Louis, Mo.
Eclipse Fuel Engineering Co., Rockford, Ill.
Fort Worth Laboratories, 828½ Monroe St., Ft. Worth, Texas. See page 158.
Greene Brothers, Wichita Falls, Texas. See page 61.
Hoskins Mfg. Co., 4437 Lawton Ave., Detroit, Mich.
Illinois Testing Laboratories, Inc., 141-143 W. Austin Ave., Chicago, Ill.
Leeds & Northrup Company, Philadelphia, Pa. See page 3.
Price Mfg. Co., 12369 Euclid Ave., Cleveland, Ohio.
Pyrolectric Instrument Co., Easton, Pa.
Refinery Supply Co., Tulsa, Okla. See page 44.
Standard Fuel Engr'g Co., 667-687 Post Ave., So. Detroit, Mich.
Taylor Instrument Co., Rochester, N. Y. See page 160.
Wilson Maeulen Co., 383 Concord Ave., New York, N. Y.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

THERMOGRAPHS

Brown Instrument Co., 4537 Wayne Ave., Philadelphia, Pa.
Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
Ernest H. DuVivier, 30 Church St., New York, N. Y.
Fort Worth Laboratories, 828½ Monroe St., Ft. Worth, Texas. See page 158.
Julien P. Friez & Sons, Baltimore St. & Central Ave., Baltimore, Md.
Henry J. Green, 1191 Bedford Ave., Brooklyn, N. Y.
Griebel Instrument Co., Carbondale, Pa.
Kolesch & Co., 138 Fulton St., New York, N. Y.
Refinery Supply Co., Tulsa, Okla. See page 44.
Taylor Instrument Co., Rochester, N. Y. See page 160.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

THERMOMETERS

American Schaeffer & Budenberg Corp., Berry & S. 5th St., Brooklyn, N. Y. See page 153.
James Berg Mfg. Co., 3707 12th Ave., Brooklyn, N. Y.
The Bristol Co., Waterbury, Conn. See page 154.
Brown Instrument Co., 4537 Wayne Ave., Philadelphia, Pa.
Carbondale Machine Co., Carbondale, Pa.
Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
Continental Supply Co., St. Louis, Missouri
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Defender Automatic Regulator Co., 709 Pine St., St. Louis, Mo.
The Denver Fire Clay Co., P. O. Box 1107 Denver, Colorado
Fort Worth Laboratories, 828½ Monroe St., Ft. Worth, Texas. See page 158.
The Foxboro Co. Inc., Foxboro, Mass. See page 155.
Julien P. Friez & Sons, Baltimore St. & Central Ave., Baltimore, Md.
Henry J. Green, 1191 Bedford Ave., Brooklyn, N. Y.
Greene Brothers, Wichita Falls, Texas. See page 61.
Griebel Instrument Co., Carbondale, Pa.
Illinois Testing Laboratories, Inc., 141-143 W. Austin Ave., Chicago, Ill.
Kolesch & Co., 138 Fulton St., New York, N. Y.
Maintenance Eng. Corp., 1802 Conti St., Houston, Texas. See page 150.
Moto-Meter Co., Inc., 15 Wilbur Ave., Long Island City, N. Y.
The Palmer Co., 26 Clay St., St. Bernard Sta., Cincinnati, Ohio.
Powers Regulator Co., 2720 Greenview Ave., Chicago, Ill.
Refinery Supply Co., Tulsa, Okla. See page 44.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
John Simmons Co., 104-10 Center St., New York, N. Y.
Standard Thermometer Co., 65 Shirley St., Boston, Mass.
Star Brass Mfg. Co., 53 Oliver St., Boston, Mass.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
C. J. Tagliabue Mfg. Co., 18 33rd St., Brooklyn, N. Y. See page 49.
Taylor Instrument Co., Rochester, N. Y. See page 160.
Carl H. Wagner, 1944 W. Albany Ave., Chicago, Ill.
Williams, Brown & Earle, 918 Chestnut St., Philadelphia, Pa. See page 149
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.
A. Zaubitz, 95-97 Cliff St., New York, N. Y.

THERMOSTATS

American Schaeffer & Budenberg Corp., Berry & S. 5th St., Brooklyn, N. Y. See page 153.
American Thermostat Co., 226 Jeliff Ave., Newark, N. J.
Atlas Valve Co., 282 South St., Newark, N. J.
Baker Ice Machine Co., 3601 Evans St., Omaha, Nebr.
The Bristol Co., Waterbury, Conn. See page 154.
Brown Instrument Co., 4537 Wayne Ave., Philadelphia, Pa.
Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Eclipse Fuel Engineering Co., Rockford, Ill.
Fort Worth Laboratories, 828½ Monroe St., Ft. Worth, Texas. See page 158.
Greene Brothers, Wichita Falls, Texas. See page 61.
Griebel Instrument Co., Carbondale, Pa.
Paul B. Huyette Co., Inc., 5 South Eighteenth St., Philadelphia, Pa.
Powers Regulator Co., 2720 Greenview Ave., Chicago, Ill.
Refinery Supply Co., Tulsa, Okla. See page 44.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Sarco Co., Inc., 183 Madison Ave., New York, N. Y.
John Simmons Co., 104-10 Center St., New York, N. Y.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
C. J. Tagliabue Mfg. Co., 18 33rd St., Brooklyn, N. Y. See Page 49.
Carl H. Wagner, 1944 W. Albany Ave., Chicago, Ill.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

THIEVES, Oil

Barnhart-Davis Co., Warren, Pa.
Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
Continental Supply Co., St. Louis, Missouri
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Fort Worth Laboratories, 828½ Monroe St., Ft. Worth, Texas. See page 158.
Greene Brothers, Wichita Falls, Texas. See page 61.
Griebel Instrument Co., Carbondale, Pa.
National Transit Pump & Machine Co., Oil City, Pa.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Oil Well Supply Co., Pittsburgh, Pa.
Refinery Supply Co., Tulsa, Okla. See page 44.
C. J. Tagliabue Mfg. Co., 18 33rd St., Brooklyn, N. Y. See page 49.
Woodward, Wight & Co., New Orleans, La. See page 153.

THREADERS, Bolt

Oster Mfg. Co., 2057 E. Sixty-First Place, Cleveland, Ohio

THREADERS, Casing

Oster Mfg. Co., 2057 E. Sixty-First Place, Cleveland, Ohio

THREADERS, Conduit

Oster Mfg. Co., 2057 E. Sixty-First Place, Cleveland, Ohio

THREADES, Pipe

Toledo Pipe Threading Machine Co., 1445 Summit St., Toledo, O.

THREADERS, Ratchet Pipe

Toledo Pipe Threading Machine Co., 1445 Summit St., Toledo, O.

TILE, Boiler

Babcock & Wilcox Co., 85 Liberty St., New York, N. Y.
Briggs Weaver Machinery Co., Dallas, Texas
Burke Engineering Co., Holland, Mich.
Chicago Retort & Fire Brick Co., 208 S. La Salle St., Chicago, Ill.
The Denver Fire Clay Co., P. O. Box 1107 Denver, Colorado
W. S. Dickey Clay Mfg. Co., Texarkana, Texas
Eureka Fire Brick Works, 1507 First Nat. Bank Bldg., Pittsburgh, Pa.
Evens & Howard Fire Brick Co., 920 Market St., St. Louis, Mo.
A. P. Green Fire Brick Co., Mexico, Mo.
T. K. Harris, Polytechnic Station, Fort Worth, Texas.
Maintenance Eng. Corp., 1802 Conti St., Houston, Texas. See page 150.
McLeod & Henry Co., Troy, N. Y.
Quigley Furnace Specialties Co., 25 Church St., New York, N. Y.
Quinn & Co., 1347 Harrison Ave., Cincinnati, Ohio
Standard Fuel Engr'g Co., 667-687 Post Ave., So. Detroit, Mich.
Walsh Fire Clay Products Co., 4073 N. Main St., St. Louis, Mo.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

TILE, Fire Clay

Acme Brick Co., Ft. Worth, Texas
Briggs Weaver Machinery Co., Dallas, Texas
Chicago Retort & Fire Brick Co., 208 S. La Salle St., Chicago, Ill.

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Evens & Howard Fire Brick Co., 920 Market St., St. Louis, Mo.
A. P. Green Fire Brick Co., Mexico, Mo.
T. K. Harris, Polytechnic Station, Fort Worth, Texas.
Maintenance Eng. Corp., 1802 Conti St., Houston, Texas. See page 150.
McLeod & Henry Co., Troy, N. Y.
Standard Fuel Engr'g Co., 667-687 Post Ave., So. Detroit, Mich.
Walsh Fire Clay Products Co., 4073 N. Main St., St. Louis, Mo.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

TIN

The Eagle-Picher Lead Co., 208 S. LaSalle St., Chicago, Ill.

TONGS, Pipe

National Transit Pump & Machine Co., Oil City, Pa.

TONGS, Rivet

Briggs Weaver Machinery Co., Dallas, Texas
National Supply Co., Toledo, Ohio
Peden Iron & Steel Co., Houston, Texas. See page 85.
Joseph T. Ryerson & Sons, 2558 W. 16th St., Chicago, Ill.
Sculley Steel & Iron Co., Chicago, Ill.
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

TOOLS, Beading

A. L. Henderer's Sons, Maryland Ave., and Beech St., Wilmington, Delaware. See page 143.

TOOLS, Flaring

A. L. Henderer's Sons, Maryland Ave., and Beech St., Wilmington, Delaware. See page 143.

TOOLS Machine

Brazelton, Wessendorff & Nelms, Houston, Texas
Briggs Weaver Machinery Co., Dallas, Texas
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Greenfield Tap & Die Corp'n., Greenfield, Mass.
The Lufkin Rule Company, Saginaw, Michigan.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
Morris Machine Tool Co., Cincinnati, Ohio
National Supply Co., Toledo, Ohio
Peden Iron & Steel Co., Houston, Texas. See page 85.
Reed-Prentice Co., Worcester, Mass.
Joseph T. Ryerson & Sons, 2558 W. 16th St., Chicago, Ill.
John Simmons Co., 104-10 Center St., New York, N. Y.
Steel Products Engineering Co., Springfield, Ohio.
John Steptoe Co., 2060 Colerain Ave, Cincinnati, Ohio
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

TOOLS, Pipe Line Construction

National Transit Pump & Machine Co., Oil City, Pa.

TOOLS, Planing

Brazelton, Wessendorff & Nelms, Houston, Texas
Briggs Weaver Machinery Co., Dallas, Texas
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Peden Iron & Steel Co., Houston, Texas. See page 85.

TOOLS, Pneumatic

Brazelton, Wessendorff & Nelms, Houston, Texas
Briggs Weaver Machinery Co., Dallas, Texas
Canton Pneumatic Co., Canton Ohio.
Chicago Pneumatic Tool Co., 6 E. 44th St., New York, N. Y.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Ingersoll-Rand Co., 11 Broadway, New York, N. Y.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Joseph T. Ryerson & Sons, 2558 W. 16th St., Chicago, Ill.
Tennant Co., Union National Bank Bldg., Houston, Texas.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

TOOLS AND ACCESSORIES, Pneumatic

King Pneumatic Tool Co., 1733 Armitage Ave., Chicago, Ill.

TOOLS, Scaling

Brazelton, Wessendorff & Nelms, Houston, Texas
Chicago Pneumatic Tool Co., 6 E. 44th St., New York, N. Y.
Thos. H. Dallett Co., 165-89 W. Clearfield St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.

TOOLS, Special Machinery

Paragon Machine Co., 77 South Ave., Rochester, N. Y.

TOOLS, Vale Reseating

M. B. Skinner Co., 562 Washington Blvd., Chicago, Ill.

TOOL POST, Portab'e, Electric

Chicago Pneumatic Tool Co., 6 E. 44th St., New York, N. Y.

TORCHES, Blow

Air Reduction Sales Co., 342 Madison Ave., New York, N. Y.
The Alexander Milburn Co., 1416 W. Baltimore St., Baltimore, Md.
Brazelton, Wessendorff & Nelms, Houston, Texas
Briggs Weaver Machinery Co., Dallas, Texas
Burdett Mfg. Co., 309 St. Johns Court, Chicago, Ill.
Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
Continental Supply Co., St. Louis, Missouri
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Hauck Mfg. Co., 127 Tenth St., Brooklyn, N. Y.
MacLeod Company, Cincinnati, Ohio
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
National Supply Co., Toledo, Ohio
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
Torchweld Equipment Co., 224 No. Carpenter St., Chicago, Ill.
Walworth Company, 88 Pearl St., Boston, Mass.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

TORCHES, Cutting

Air Reduction Sales Co., 342 Madison Ave., New York, N. Y.
The Alexander Milburn Co., 1416 W. Baltimore St., Baltimore, Md.
Brazelton, Wessendorff & Nelms, Houston, Texas
Briggs Weaver Machinery Co., Dallas, Texas
Burdett Mfg. Co., 309 St. Johns Court, Chicago, Ill.
Carbic Mfg. Co., Duluth, Minn.
Columbian Steel Tank Co., 1401-1531 W. Twelfth St., Kansas City, Mo.
Henderson-Willis Welding & Cutting Co., 2305-09 N. Eleventh St., St. Louis, Mo.
MacLeod Company, Cincinnati, Ohio
National Oxygen Co., 5811 W. 66th St., Chicago, Ill.
Oxweld Acetylene Co., Long Island City, L. I., N. Y.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Plouff Co., 170 Summer St., Boston, Mass.
Joseph T. Ryerson & Sons, 2558 W. 16th St., Chicago, Ill.
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
Smiths Inventions, Inc., 2636 Fourth St., S.E., Minneapolis, Minn.
Torchweld Equipment Co., 224 No. Carpenter St., Chicago, Ill.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

TOWERS

E. B. Badger & Sons Co., 62-75 Pitts St., Boston, Mass.
C. F. Braun & Co., Alhambra, Cal. See pages 78-79.
J. P. Devine Co., 1380 Clinton, Buffalo, N. Y.
Erie City Iron Works, Erie, Pa.
Kansas City Structural Steel Co., Kansas City, Kansas.
The Kaw Boiler Works Co., Kansas City, Kansas. See page 117.
Mosher Steel and Machinery Co., 900 S. Austin St., Dallas, Texas
Petroleum Iron Works, Sharon, Pa.
Pioneer Tank & Boiler Co., Box 1926, Tulsa, Okla. See page 157.
Southern Engine & Pump Co., Houston, Texas
Tracy Engineering Co., 479-485 Sixth St., San Francisco, Calif.
Tulsa Boiler & Machinery Co., P. O. Box 1963, Tulsa, Okla.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
Winkler and Koch, 429 First National Bank, Wichita, Kansas. See page 109.

TOWERS, Absorber

Dean E. Foster, New Wright Bldg., Tulsa, Okla.
Leader Iron Works, Decatur, Ill.

TOWERS, Bubble

American Tank Co., Okla. City, Okla.
E. B. Badger & Sons Co., 62-75 Pitts St., Boston, Mass.
J. P. Devine Co., 1380 Clinton, Buffalo, N. Y.
John Dollinger, Jr., Inc., Box 423, Beaumont, Texas
Erie City Iron Works, Erie, Pa.
Dean E. Foster, New Wright Bldg., Tulsa, Okla.
Kansas City Structural Steel Co., Kansas City, Kansas.
The Kaw Boiler Works Co., Kansas City, Kansas. See page 117.
Arthur G. McKee & Co., 2422 Euclid Ave., Cleveland, Ohio
Newton Process Mfg. Co., Fullerton, California.
Petroleum Iron Works, Sharon, Pa.
Pioneer Tank & Boiler Co., Box 1926, Tulsa, Okla. See page 157.
Riter-Conley Co., Oliver Bldg., Pittsburgh, Pa.
Tulsa Boiler & Machinery Co., P. O. Box 1963, Tulsa, Okla.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
The Widdell Engineering Co., 512 American Bk. Bldg., Kansas City, Mo.
Winkler and Koch, 429 First National Bank, Wichita, Kansas. See page 109.

TOWERS Cascade

J. P. Devine Co., 1380 Clinton, Buffalo, N. Y.
Erie City Iron Works, Erie, Pa.
Petroleum Iron Works, Sharon, Pa.
Pioneer Tank & Boiler Co., Box 1926, Tulsa, Okla. See page 157.
Riter-Conley Co., Oliver Bldg., Pittsburgh, Pa.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.

TOWERS, Cooling

C. F. Braun & Co., Alhambra, Cal. See pages 78-79.
Edwin Burhorn Co., 25 West Broadway, New York, N. Y.
Erie City Iron Works, Erie, Pa.
Franklin B. Hart, Jr., Co., 15 Park Row, New York, N. Y.
Kansas City Structural Steel Co., Kansas City, Kansas.
The Kaw Boiler Works Co., Kansas City, Kansas. See page 117.
Mosher Steel and Machinery Co., 900 S. Austin St., Dallas, Texas
Newton Process Mfg Co., Fullerton, California.
Pittsburgh Cooling Tower Co., 401 Bowman Bldg., Pittsburgh, Pa.
Riter-Conley Co., Oliver Bldg., Pittsburgh, Pa.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Tulsa Boiler & Machinery Co., P. O. Box 1963, Tulsa, Okla.
Wheeler Condenser & Engineering Corp., 149 Broadway, N. Y., N.Y
The Youngstown Boiler & Tank Co., Youngstown, Ohio

TOWERS, Spray

Pittsburgh Cooling Tower Co., 401 Bowman Bldg., Pittsburgh, Pa.

TOWERS, Vaporizing

C. F. Braun & Co., Alhambra, Cal. See pages 78-79.
J. P. Devine Co., 1380 Clinton, Buffalo, N. Y.
Erie City Iron Works, Erie, Pa.
Dean E. Foster, New Wright Bldg., Tulsa, Okla.
Kansas City Structural Steel Co., Kansas City, Kansas.
The Kaw Boiler Works Co., Kansas City, Kansas. See page 117.
Arthur G. McKee & Co., 2422 Euclid Ave., Cleveland, Ohio
Petroleum Iron Works, Sharon, Pa.
Pioneer Tank & Boiler Co., Box 1926, Tulsa, Okla. See page 157.
Riter-Conley Co., Oliver Bldg., Pittsburgh, Pa.
Tulsa Boiler & Machinery Co., P. O. Box 1963, Tulsa, Okla.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
The Widdell Engineering Co., 512 American Bk. Bldg., Kansas City, Mo.

TOWERS, Water Cooling

Franklin B. Hart, Jr., Co., 15 Park Row, New York, N. Y.
Southwestern Engineering Co., Hollingsworth Bldg., Los Angeles, Cal. See page 109.

TRANSFORMERS, Electrical

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
The Esterline-Angus Co., P. O. Box 596, Indianapolis, Ind.
General Electric Co., Schenectady, New York
Houston Armature Works, Houston, Texas
Langstadt-Meyer Co., Appleton, Wis.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

TRANSFORMERS, Speed

A. & F. Brown Co., 79 Barclay St., New York, N. Y.
The Hill Clutch Machine & Foundry Co., Cleveland, Ohio
Jones, W. A., Foundry & Machine Co., 4415 W. Roosevelt Road, Chicago, Illinois
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

TRANSMISSION, Equipment

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Briggs Weaver Machinery Co., Dallas, Texas
A. & F. Brown Co., 79 Barclay St., New York, N. Y.
Diamond Chain & Mfg. Co., 502 Kentucky Ave., Indianapolis, Ind.
Diamond Rubber Co., Inc., Akron, Ohio.
R. & J. Dick Co., Inc., Passaic, N. J.
Falls Clutch & Machinery Co., Cuyahoga Falls, Ohio.
The Hill Clutch Machine & Foundry Co., Cleveland, Ohio
Jones, W. A., Foundry & Machine Co., 4415 W. Roosevelt Road, Chicago, Illinois
Moloch Co., Kaukauna, Wis.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Republic Rubber Co., Youngstown, Ohio
Texas Belting Co., Houston, Texas.
Weller Mfg. Co., 1820 N. Kostnor Ave., Chicago, Ill.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
I. B. Williams & Sons, 9 Orchard St., Dover, N. H.
T. B. Wood's Sons Co., Chambersburg, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

TRAPS, Gasoline

W. H. Nicholson & Co., 12 Oregon St., Wilkes-Barre, Pa.

TRAPS, Oil

Armstrong Machine Works, Three Rivers, Mich.

TRAPS, Steam

Albany Steam Trap Co., 317-319 N. Pearl St., Albany, N. Y.
Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
American Schaeffer & Budenberg Corp., Berry & S. 5th St., Brooklyn, N. Y. See page 153.

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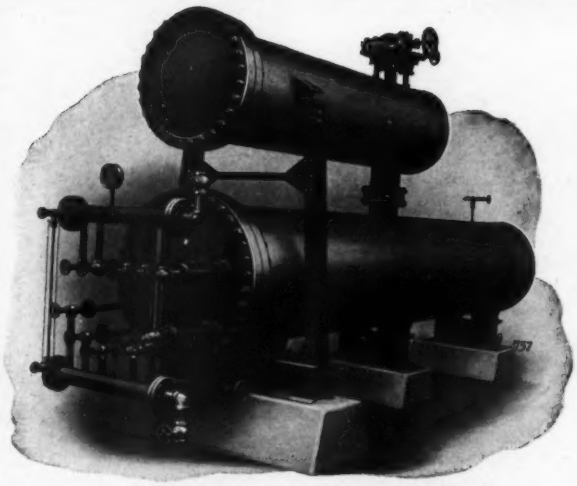

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Briggs Weaver Machinery Co., Dallas, Texas
F. A. Burrows Mfg. Co., 41-45 N. Water St., York, Pa.
The Cochrane Corp., 3130 N. 17th St., Philadelphia, Pa.
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Equitable Equipment Co., Inc., New Orleans, La.
Julian d'Este Co., 26 Canal St., Boston, Mass.
Fisher Governor Co., Marshalltown, Iowa. See page 81.
Foskett & Bishop Co., New Haven, Conn.
Golden-Anderson Valve Specialty Co., 1228 Fulton Bldg., Pittsburgh, Pa.
Paul B. Huyette Co., Inc., 5 South Eighteenth St., Philadelphia, Pa.
Jenkins Bros., 80 White St., New York, N. Y.
Johns-Manville Inc., 292 Madison Ave., New York, N. Y.
Kelley & Mueller, Inc., 34 W. Thirteenth St., New York, N. Y.
The Kellogg-Mackay Co., 2020-36 Walnut St., Kansas City, Mo.
F. J. Low Co., Inc., 15 W. 44th St., New York, N. Y.
McAlear Mfg. Co., 1901-07 Southwestern Ave., Chicago, Ill.
Milwaukee Steam Appliance Co., West Allis, Wis.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
W. H. Nicholson & Co., 12 Oregon St., Wilkes-Barre, Pa.
Nitingale & Childs Co., 195 Albany St., Cambridge Sta., Boston, Mass.
Oil Well Supply Co., Pittsburgh, Pa.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Peabody Engineering Corp., 110 E. Forty Second St., New York, N. Y.
Perolin Co. of America, 1112 W. 37th St., Chicago, Illinois
Plouff Co., 170 Summer St., Boston, Mass
Refinery Supply Co., Tulsa, Okla. See page 44.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
"S-C" Regulator Mfg. Co., Fostoria, Ohio.
Sarco Co., Inc., 183 Madison Ave., New York, N. Y.
C. E. Squires Co., E. Fortieth St. & Kelley Ave., Cleveland, Ohio.
Stickle Steam Specialties Co., Indianapolis, Ind.
The Swartwout Co., 18525 Euclid Ave., Cleveland, Ohio.
Sweet & Doyle Foundry & Machine Co., Green Island, Troy, N. Y. See page 45.
Tennant Co., Union National Bank Bldg., Houston, Texas.
Trane Co., LaCrosse, Wis.
Union Iron Works, Selma, Ala.
Walworth Company, 88 Pearl St., Boston, Mass.
Watson & McDaniel Co., 146 N. Seventh St., Philadelphia, Pa.
William Gauge Co., 543 Fourth Ave., Pittsburgh, Pa.
D. T. Williams Valve Co., Spring Grove Ave. & Township St., Cincinnati, Ohio. See page 35.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.
Wright Austin Co., 315 W. Woodbridge, Detroit, Mich.

TRAPS, Steam High Pressure

Powers Regulator Co., 2720 Greenview Ave., Chicago, Ill.

TRAPS, Vacuum

Armstrong Machine Works, Three Rivers, Mich.

TROUGHS AND CONVEYORS Filter Press

Union Engineering Co., Cleveland, Ohio.

TRUCKS

The Lakewood Engineering Co., Cleveland, Ohio

TUBES

The Calorizing Co., Wilkinsburg, Pa.

TUBES, Boiler

Allegheny Steel Co., Pittsburgh, Pa.
American Rolling Mill Co., Middletown, Ohio
American Tube & Pipe Bending Co., Niles, Ohio
Babcock & Wilcox Co., 85 Liberty St., New York, N. Y.
Babcock-Wilcox and Goldie-McCulloch, Ltd., Galt, Ontario, Canada
Berger Mfg. Co., Canton, Ohio
Bethlehem Steel Co., Bethlehem, Pa.
Briggs Weaver Machinery Co., Dallas, Texas
Casey-Hodges Mfg. Co., Chattanooga, Tenn.
Chattanooga Boiler & Tank Co., Box 316, Chattanooga, Tenn.
Continental Supply Co., St. Louis, Missouri
The Cullen Co., Clinton, Iowa
D. M. Dillon Steam Boiler Works, Fitchburg, Mass.
John Dollinger, Jr., Inc., Box 423, Beaumont, Texas
T. F. Downey Boiler Works, 2600-10 W. Grand Ave., Chicago, Ill.
Eclipse Fuel Engineering Co., Rockford, Ill.
Erie City Iron Works, Erie, Pa.
Globe Steel Tubes Co., 1345 Burnham St., Milwaukee, Wis.
Harrisburg Pipe & Pipe Bending Co,. Houston, Texas
Heine Boiler Co., St. Louis, Mo.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Kansas City Structural Steel Co., Kansas City, Kansas.
The Kaw Boiler Works Co., Kansas City, Kansas. See page 117.
E. Leonard & Sons, Ltd., York St., London, Canada.
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.
Milwaukee Boiler Mfg. Co., 35th St. & National Ave., Milwaukee, Wis.
Monangahela Tube Co., Pittsburgh, Pa.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
National Tube Co., Frick Bldg., Pittsburgh, Pa.
Ocean Shore Iron Works, 550 Eighth St., San Francisco, Calif.
Oil Well Supply Co., Pittsburgh, Pa.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Pioneer Tank & Boiler Co., Box 1926, Tulsa, Okla. See page 157.
Pittsburgh Steel Co., Union Arcade Bldg., Pittsburgh, Pa.
Pittsburgh Steel Products Co., Pittsburgh, Pa.
Joseph T. Ryerson & Sons, 2558 W. 16th St., Chicago, Ill.
Sculley Steel & Iron Co., Chicago, Ill.
John Simmons Co., 104-10 Center St., New York, N. Y.
The Stanwood Corp., Cincinnati, O.
Tennant Co., Union National Bank Bldg., Houston, Texas.
Tulsa Boiler & Machinery Co., P. O. Box 1963, Tulsa, Okla.
Tyler Tube & Pipe Co., Washington, Pa.
Union Iron Works, Selma, Ala.
C. J. Walton & Son, 1221 W. Main St., Louisville, Ky.
Walworth Company, 88 Pearl St., Boston, Mass.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.
The Youngstown Sheet & Tube Co., Youngstown, Ohio

TUBES Boiler Charcoal Iron

Babcock-Wilcox and Goldie-McCulloch, Ltd., Galt, Ontario, Canada
Bethlehem Steel Co., Bethlehem, Pa.
Continental Supply Co., St. Louis, Missouri
Erie City Iron Works, Erie, Pa.
Harrisburg Pipe & Pipe Bending Co,. Houston, Texas
Heine Boiler Co., St. Louis, Mo.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Milwaukee Boiler Mfg. Co., 35th St. & National Ave., Milwaukee, Wis.
Monangahela Tube Co., Pittsburgh, Pa.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
Ocean Shore Iron Works, 550 Eighth St., San Francisco, Calif.
Oil Well Supply Co., Pittsburgh, Pa.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Reading Iron Co., Reading, Pa.
Joseph T. Ryerson & Sons, 2558 W. 16th St., Chicago, Ill.
Sculley Steel & Iron Co., Chicago, Ill.
Tyler Tube & Pipe Co., Washington, Pa.
C. J. Walton & Son, 1221 W. Main St., Louisville, Ky.
Walworth Company, 88 Pearl St., Boston, Mass.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

TUBES Condenser

American Rolling Mill Co., Middletown, Ohio
Babcock-Wilcox and Goldie-McCulloch, Ltd., Galt, Ontario, Canada
Berger Mfg. Co., Canton, Ohio
Bridgeport Brass Co., Bridgeport, Conn.
Briggs Weaver Machinery Co., Dallas, Texas
Carbondale Machine Co., Carbondale, Pa.
Chase Metal Works, Waterbury, Conn.
Globe Steel Tubes Co., 1345 Burnham St., Milwaukee, Wis.
Harrisburg Pipe & Pipe Bending Co,. Houston, Texas
U. T. Hungerford Brass & Copper Co., 80 Lafayette St., New York, N. Y.
Illinois Glass Co., Alton, Ill.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.
Monangahela Tube Co., Pittsburgh, Pa.
National Supply Co., Toledo, Ohio
Peden Iron & Steel Co., Houston, Texas. See page 85.
Pittsburgh Steel Products Co., Pittsburgh, Pa.
Refinery Supply Co., Tulsa, Okla. See page 44.
Wheeler Condenser & Engineering Corp., 149 Broadway, N. Y., N.Y
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.
York Manufacturing Co., York, Pa. See page 143.

TUBES, Pitot

The American Blower Co., 6004 Russell, Detroit, Mich.
Fort Worth Laboratories, 828½ Monroe St., Ft. Worth, Texas. See page 158.

TUBES, Stainless or Rustless

United Alloy Steel Corp., Canton, Ohio.

TUBES, Still

Babcock & Wilcox Co., 85 Liberty St., New York, N. Y.
Berger Mfg. Co., Canton, Ohio
Briggs Weaver Machinery Co., Dallas, Texas
Casey-Hodges Mfg. Co., Chattanooga, Tenn.
Continental Supply Co., St. Louis, Missouri
Harrisburg Pipe & Pipe Bending Co,. Houston, Texas
Heine Boiler Co., St. Louis, Mo.
F. W. Jesup & Co.. 90-92 West Broadway, New York, N. Y.
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.
Monangahela Tube Co., Pittsburgh, Pa.
National Supply Co., Toledo, Ohio
Peden Iron & Steel Co., Houston, Texas. See page 85.
Pittsburgh Steel Products Co., Pittsburgh, Pa.

TUBING, Brazed

Southern Brass Mfg. Co., Houston, Texas.

TUBING, Gauge

Greene Brothers, Wichita Falls, Texas. See page 61.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Refinery Supply Co., Tulsa, Okla. See page 44.
Carl H. Wagner, 1944 W. Albany Ave., Chicago, Ill.

TUBING, Lead Lined

United Lead Co., 111 Broadway, New York, N. Y.

TUBING, Metal

American Brass Co., Waterbury, Conn.
Breeze Metal Hose & Mfg. Co., 22-46 S. 6th St., Newark, N. J.

TUBING, Rubber

Briggs Weaver Machinery Co., Dallas, Texas
Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
Continental Supply Co., St. Louis, Missouri
Diamond Rubber Co., Inc., Akron, Ohio.
Fort Worth Laboratories, 828½ Monroe St., Ft. Worth, Texas. See page 158.
Garlock Packing Co., Palmyra, N. Y. See page 67.
B. F. Goodrich Rubber Co., Akron, Ohio
Greene Brothers, Wichita Falls, Texas. See page 61.
La Favorite Rubber Mfg. Co., Wagaraw Rd., Hawthorne, N. J.
The Manhattan Rubber Mfg. Co., Passaic, N. J.
National Supply Co., Toledo, Ohio
New York Belting & Packing Co., 91-93 Chamber St., New York, N. Y.
Pioneer Rubber Mills, 353 Sacramento St., San Francisco, Calif.
Refinery Supply Co., Tulsa, Okla. See page 44.
Republic Rubber Co., Youngstown, Ohio
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
Torchweld Equipment Co., 224 No. Carpenter St., Chicago, Ill.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

TUBING, Seamless

Southern Brass Mfg. Co., Houston, Texas.

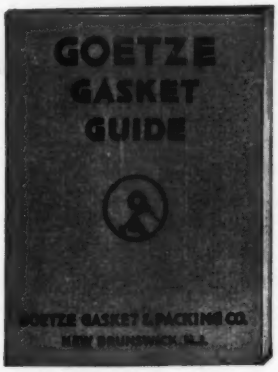
TURBINES

Babcock-Wilcox and Goldie-McCulloch, Ltd., Galt, Ontario, Canada
Bethlehem Shipbuilding Corp., Bethlehem, Pa.
Carling Turbine Blower Co., Inc., 104 Harding St., Worcester, Mass.
De Laval Steam Turbine Co., Trenton, N. J. See page 123.
Elliott Company, Jeannette, Pa. See page 101.
A. M. Lockett & Co Ltd., Queen & Crescent Bldg., New Orleans, La.
Southern Engine & Pump Co., Houston, Texas
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Terry Steam Turbine Co., Hartford, Conn.

TURBINES, Steam

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Babcock-Wilcox and Goldie-McCulloch, Ltd., Galt, Ontario, Canada
Bethlehem Shipbuilding Corp., Bethlehem, Pa.
Carling Turbine Blower Co., Inc., 104 Harding St., Worcester, Mass.
De Laval Steam Turbine Co., Trenton, N. J. See page 123.
Elliott Company, Jeannette, Pa. See page 101.
General Electric Co., Schenectady, New York
A. M. Lockett & Co., Ltd., Queen & Crescent Bldg., New Orleans, La.
H. A. Paine Co., 419-20 Cotton Exchange Bldg., Houston, Texas.
Power Turbo Blower Co., 350 Madison Ave., New York, N. Y.
The Pyle-National Co., Chicago, Ill.
Ridgeway Dynamo & Engine Co., Ridgway, Pa.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Southern Engine & Pump Co., Houston, Texas
Standard Turbine Corp., Wellsville, N. Y.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Thermal Efficiency Co., 1210 Scarritt Bldg., Kansas City, Mo. See page 113.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

GOETZE



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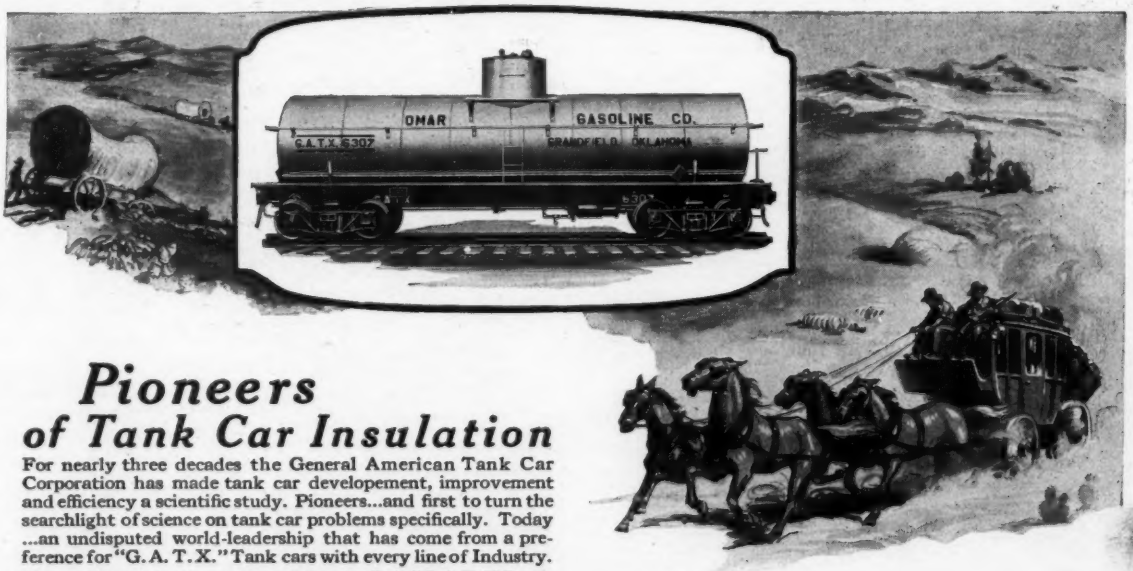

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Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

V

VACUUM STILLS

Leader Iron Works, Decatur, Ill.

VALVE SEATS

Mission Sales Co., 827 First Nat. Bank Bldg., Houston, Texas.

VALVES

Adkins, Young & Allen Co., 561 Washington Blvd., Chicago, Ill.
Albany Steam Trap Co., 317-319 N. Pearl St., Albany, N. Y.
Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
American Schaeffer & Budenberg Corp., Berry & S. 5th St., Brooklyn, N. Y. See page 153.
American Tank Co., Okla. City, Okla.
Anchor Packing Co., Lafayette Bldg., Philadelphia, Pa.
Atlas Valve Co., 282 South St., Newark, N. J.
Barco Mfg. Co., 1801 Winnemac Ave., Chicago, Ill.
Bashlin Co., Warren, Pa.
H. Belfield Co., 435 N. Broad St., Philadelphia, Pa.
C. F. Braun & Co., Alhambra, Cal. See pages 78-79.
Briggs Weaver Machinery Co., Dallas, Texas
Burdett Mfg. Co., 309 St. Johns Court, Chicago, Ill.
A. W. Cadman Mfg. Co., 2814 Smallman St., Pittsburgh, Pa.
Central Automatic Sprinkler Co., 5145 Delancey St., Philadelphia, Pa.
Chapman Valve Mfg. Co., Indian Orchard, Mass.
Continental Supply Co., St. Louis, Missouri
Darling Valve & Mfg. Co., Williamsport, Pa.
Defender Automatic Regulator Co., 709 Pine St., St. Louis, Mo.
Detroit Lubricator Co., 5938 Trumbull Ave., Detroit, Mich.
Eddy Valve Co., Waterford, N. Y.
The Edward Valve & Mfg. Co., East Chicago, Ind.
Everlasting Valve Co., 1 Exchange Place, Jersey City, N. J.
Fairbanks Co., 416-22 Broome St., New York, N. Y.
Golden-Anderson Valve Specialty Co., 1228 Fulton Bldg., Pittsburgh, Pa.
Gorton & Lidgerwood Co., 96 Liberty St., New York, N. Y.
Greene Brothers, Wichita Falls, Texas. See page 61.
Grinnell Co., Inc., Providence, R.I.
Harrisburg Pipe & Pipe Bending Co., Houston, Texas
Homestead Valve Mfg. Co., Inc., Homestead, Pa.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Hughes Tool Co., 300 Hughes St., Houston, Texas. See insert.
Hydraulic Press Mfg. Co., Mt. Gilead, Ohio.
Illinois Mallable Iron Co., 1801 Diversey Blvd., Chicago, Ill.
Jenkins Bros., 80 White St., New York, N. Y.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Judson Governor Co., Rochester, New York.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
The Kennedy Valve Mfg. Co., Elmira, N. Y.
Kerotest Mfg. Co., 2525 Liberty Ave., Pittsburgh, Pa.
Leslie Co., Lyndhurst, N. J.
The Ludlow Valve Mfg. Co., R. A. Long Bldg., Kansas City, Mo.
Lukenheimer Co., Cincinnati, Ohio. See page 17.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
Mason Regulator Co., Milton, Mass.
Mesta Machine Co., Pittsburgh, Pa.
Metric Metal Works, Erie, Pa. See pages 70-71.
Midwest Piping & Supply Co., Second & Miller Sts., St. Louis, Mo. See page 41.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
National Valve & Mfg. Co., 31st and Liberty, Pittsburgh, Pa.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Ohio Brass Co., Mansfield, Ohio.
Ohio Injector Co., S. Main St., Wadsworth, Ohio.
Oil Well Supply Co., Pittsburgh, Pa.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Perolin Co. of America, 1112 W. 37th St., Chicago, Illinois
Philadelphia Steel & Iron Co., 1008 Commercial Trust Bldg., Philadelphia, Pa.
Plouff Co., 170 Summer St., Boston, Mass.
Wm. Powell Co., Cincinnati, Ohio
The Randle Machinery Co., 1723 Power St., Cincinnati, Ohio
Reading Steel Castings Co., Reading, Pa.
Republic Rubber Co., Youngstown, Ohio
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Schutte & Koerting Co., 1165 Thompson St., Philadelphia, Pa. See page 149.
Scott Valve Mfg. Co., Detroit, Mich.
Shartle Bros. Machine Co., Middletown, Ohio.
John Simmons Co., 104-10 Center St., New York, N. Y.
Star Brass Mfg. Co., 53 Oliver St., Boston, Mass.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
C. J. Tagliabue Mfg. Co., 18 33rd St., Brooklyn, N. Y. See page 49.
Titusville Iron Works, Titusville, Pa.
Victory Mfg. Co., Niles, Calif.
Henry Vogt Machine Co., Louisville, Ky. See page 5.
Walworth Company, 88 Pearl St., Boston, Mass.
Waters Governor Co., 141 Milk St., Boston, Mass.
Western Gas Construction Co., Fort Wayne, Ind.
Witherup Cork Packing Co., Beaumont, Texas.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

VALVES, Acetyline

Kerotest Mfg. Co., 2525 Liberty Ave., Pittsburgh, Pa.

VALVES, Acid

Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
Anchor Packing Co., Lafayette Bldg., Philadelphia, Pa.
The Barber Asphalt Co., 1600 Arch St., Philadelphia, Pa.
Barco Mfg. Co., 1801 Winnemac Ave., Chicago, Ill.
H. Belfield Co., 435 N. Broad St., Philadelphia, Pa.
Briggs Weaver Machinery Co., Dallas, Texas
A. W. Cadman Mfg. Co., 2814 Smallman St., Pittsburgh, Pa.
Continental Supply Co., St. Louis, Missouri
Darling Valve & Mfg. Co., Williamsport, Pa.
Eddy Valve Co., Waterford, N. Y.
Everlasting Valve Co., 1 Exchange Place, Jersey City, N. J.
Fairbanks Co., 416-22 Broome St., New York, N. Y.
Greene Brothers, Wichita Falls, Texas. See page 61.
Hart Co., Inc., Williamsport, Pa.
Homestead Valve Mfg. Co., Inc., Homestead, Pa.
Jenkins Bros., 80 White St., New York, N. Y.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Judson Governor Co., Rochester, New York.
The Kennedy Valve Mfg. Co., Elmira, N. Y.
The Ludlow Valve Mfg. Co., R. A. Long Bldg., Kansas City, Mo. See page 93.
Lunkenheimer Co., Cincinnati, Ohio. See page 17.
Maintenance Eng. Corp., 1802 Conti St., Houston, Texas. See page 150.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Ohio Injector Co., S. Main St., Wadsworth, Ohio.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Philadelphia Steel & Iron Co., 1008 Commercial Trust Bldg., Philadelphia, Pa.
Plouff Co., 170 Summer St., Boston, Mass.
Wm. Powell Co., Cincinnati, Ohio
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Schutte & Koerting Co., 1165 Thompson St., Philadelphia, Pa. See page 149.
John Simmons Co., 104-10 Center St., New York, N. Y.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
United Lead Co., 111 Broadway, New York, N. Y.
Walworth Company, 88 Pearl St., Boston, Mass.
Witherup Cork Packing Co., Beaumont, Texas.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

VALVES, AIR

Brunner Mfg. Co., Utica, N. Y.
C. A. Dunham Co., The Dunham Bldg., 450 E. Ohio St., Chicago, Illinois
May Machinery Co., Second National Bank Bldg., Houston, Tex.

VALVES—Alarm (Sprinkler)

Central Automatic Sprinkler Co., 5145 Delancey St., Philadelphia, Pa.

VALVES, Ammonia

Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
Anchor Packing Co., Lafayette Bldg., Philadelphia, Pa.
Arctic Ice Machine Co., Canton, Ohio
Armstrong Machinery Co., 3201-19 E. Riverside, Spokane, Wash.
Baker Ice Machine Co., 3601 Evans St., Omaha, Nebr.
Barco Mfg. Co., 1801 Winnemac Ave., Chicago, Ill.
Briggs Weaver Machinery Co., Dallas, Texas
Carbondale Machine Co., Carbondale, Pa.
Continental Supply Co., St. Louis, Missouri
Darling Valve & Mfg. Co., Williamsport, Pa.
Everlasting Valve Co., 1 Exchange Place, Jersey City, N. J.
Greene Brothers, Wichita Falls, Texas. See page 61.
Hart Co., Inc., Williamsport, Pa.
Hydraulic Press Mfg. Co., Mt. Gilead, Ohio.
Jenkins Bros., 80 White St., New York, N. Y.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Judson Governor Co., Rochester, New York.
Kelly and Jones Co., Greensburg, Pa. See page 75.
Kerotest Mfg. Co., 2525 Liberty Ave., Pittsburgh, Pa.
Lunkenheimer Co., Cincinnati, Ohio. See page 17.
Milwaukee Steam Appliance Co., West Allis, Wis.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Philadelphia Steel & Iron Co., 1008 Commercial Trust Bldg., Philadelphia, Pa.
Plouff Co., 170 Summer St., Boston, Mass.
Refrigerating Specialties Co., 714 S. Sacramento Blvd., Chicago, Ill.
John Simmons Co., 104-10 Center St., New York, N. Y.
Star Brass Mfg. Co., 53 Oliver St., Boston, Mass.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
The Vilter Mfg. Co., 936 Milwaukee St., Milwaukee, Wis. See page 161.
Henry Vogt Machine Co., Louisville, Ky. See page 5.
Walworth Company, 88 Pearl St., Boston, Mass.
Witherup Cork Packing Co., Beaumont, Texas.
York Mfg. Co., York, Pa. See page 143.

VALVES, Automatic Regulator

Baker Ice Machine Co., 3601 Evans St., Omaha, Nebr.

VALVES, Automatic Fuel Oil Shut-Off

C. J. Tagliabue Mfg. Co., 18 33rd St., Brooklyn, N. Y. See page 49.

VALVES, Automatic, Water

Baker Ice Machine Co., 3601 Evans St., Omaha, Nebr.

VALVES, Back Pressure

Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
Briggs Weaver Machinery Co., Dallas, Texas
F. A. Burrows Mfg. Co., 41-45 N. Water St., York, Pa.
Carbic Mfg. Co., Duluth, Minn.
The Cochrane Corp., 3130 N. 17th St., Philadelphia, Pa.
Continental Supply Co., St. Louis, Missouri
Fisher Governor Co., Marshalltown, Iowa. See page 81.
Greene Brothers, Wichita Falls, Texas. See page 61.
Griscom-Russell Co., 285 Madison Ave., New York, N. Y. See page 133.
Hart Co., Inc., Williamsport, Pa.
Jenkins Bros., 80 White St., New York, N. Y.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Kelley & Mueller, Inc., 34 W. Thirteenth St., New York, N. Y.
The Kennedy Valve Mfg. Co., Elmira, N. Y.
Lalor Fuel Oil System Co., Baltimore, Md.
Maintenance Eng. Corp., 1802 Conti St., Houston, Texas. See page 150.
Mason Regulator Co., Milton, Mass.
McAlear Mfg. Co., 1901-07 Southwestern Ave., Chicago, Ill
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
National Valve & Mfg. Co., 31st and Liberty, Pittsburgh, Pa.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Oxweld Acetylene Co., Long Island City, L. I., N. Y.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Pitts & Kitts Mfg. & Supply Co., 91 7th Ave., New York, N. Y.
Plouff Co., 170 Summer St., Boston, Mass.
Refrigerating Specialties Co., 714 S. Sacramento Blvd., Chicago, Ill.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Schutte & Koerting Co., 1165 Thompson St., Philadelphia, Pa.
Scott Valve Mfg. Co., Detroit, Mich.
John Simmons Co., 104-10 Center St., New York, N. Y.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Stickle Steam Specialties Co., Indianapolis, Ind.
Thermal Efficiency Co., 1210 Scarritt Bldg., Kansas City, Mo. See page 113.
Titusville Iron Works, Titusville, Pa.
Torchweld Equipment Co., 224 No. Carpenter St., Chicago, Ill.
Walworth Company, 88 Pearl St., Boston, Mass.

VALVES, Balanced

Atlas Valve Co., 282 South St., Newark, N. J.
H. Belfield Co., 435 N. Broad St., Philadelphia, Pa.
Boylston Steam Specialty Co., 116 W. Illinois St., Chicago, Ill.
Briggs Weaver Machinery Co., Dallas, Texas
Continental Supply Co., St. Louis, Missouri
Defender Automatic Regulator Co., 709 Pine St., St. Louis, Mo.
Julian d'Este Co., 26 Canal St., Boston, Mass.
Golden-Anderson Valve Specialty Co., 1228 Fulton Bldg., Pittsburgh, Pa.
Greene Brothers, Wichita Falls, Texas. See page 61.
Jenkins Bros., 80 White St., New York, N. Y.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Kelley & Mueller, Inc., 34 W. Thirteenth St., New York, N. Y.
The Kennedy Valve Mfg. Co., Elmira, N. Y.

Lalor Fuel Oil System Co., Baltimore, Md.
Lunkenheimer Co., Cincinnati, Ohio. See page 17.
Maintenance Eng. Corp., 1802 Conti St., Houston, Texas. See page 150.
Mason Regulator Co., Milton, Mass.
McAlear Mfg. Co., 1901-07 Southwestern Ave., Chicago, Ill.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Pitts & Kitts Mfg. & Supply Co., 91 7th Ave., New York, N. Y.
Plouff Co., 170 Summer St., Boston, Mass.
Wm. Powell Co., Cincinnati, Ohio
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
"S-C" Regulator Mfg. Co., Fostoria, Ohio.
Schutte & Koerting Co., 1165 Thompson St., Philadelphia, Pa. See page 149.
Scott Valve Mfg. Co., Detroit, Mich.
John Simmons Co., 104-10 Center St., New York, N. Y.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Stickle Steam Specialties Co., Indianapolis, Ind.
C. J. Tagliabue Mfg. Co., 18 33rd St., Brooklyn, N. Y. See page 49.
Walworth Co., 88 Pearl St., Boston, Mass.
Waters Governor Co., 141 Milk St., Boston, Mass.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

VALVES, Ball Check

The D. T. Williams Valve Co., Spring Grove Ave. & Township St., Cincinnati, Ohio. See page 35.

VALVES, Ball Drip

Briggs Weaver Machinery Co., Dallas, Texas
Stewart R. Browne Mfg. Co., New York, N. Y.
Central Automatic Sprinkler Co., 5145 Delancey St., Philadelphia, Pa.
Continental Supply Co., St. Louis, Missouri
Lewis Steam Specialty & Valve Co., 5145 Delancey St., Philadelphia, Pa.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Plouff Co., 170 Summer St., Boston, Mass.
John Simmons Co., 104-10 Center St., New York, N. Y.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.

VALVES, Blow-off

Albany Steam Trap Co., 317-319 N. Pearl St., Albany, N. Y.
The Alexander Milburn Co., 1416 W. Baltimore St., Baltimore, Md.
Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
Barco Mfg. Co., 1801 Winnemac Ave., Chicago, Ill.
Bashlin Co., Warren, Pa.
Briggs Weaver Machinery Co., Dallas, Texas
A. W. Cadman Mfg. Co., 2814 Smallman St., Pittsburgh, Pa.
Continental Supply Co., St. Louis, Missouri
Darling Valve & Mfg. Co., Williamsport, Pa.
Eckenroth Valve & Mfg. Co., 158 Connaroe St., Philadelphia, Pa.
Eclipse Fuel Engineering Co., Rockford, Ill.
The Edward Valve & Mfg. Co., East Chicago, Ind.
Elliott Co., Jeannette, Pa. See page 101.
Equitable Meter and Mfg. Co., 422-444 First Ave., Pittsburgh, Pa.
Everlasting Valve Co., 1 Exchange Place, Jersey City, N. J.
Fairbanks Co., 416-22 Broome St., New York, N. Y.
Greene Brothers, Wichita Falls, Texas. See page 61.
Hart Co., Inc., Williamsport, Pa.
Homestead Valve Mfg. Co., Inc., Homestead, Pa.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Paul B. Huyette Co., Inc., 5 South Eighteenth St., Philadelphia, Pa.
Jarecki Mfg. Co., Erie, Pa.
Jenkins Bros., 80 White St., New York, N. Y.
Judson Governor Co., Rochester, New York.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Kelly and Jones Co., Greensburg, Pa. See page 75.
Lunkenheimer Co., Cincinnati, Ohio. See page 17.
Maintenance Eng. Corp., 1802 Conti St., Houston, Texas. See page 150.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
Milwaukee Boiler Mfg. Co., 35th St. & National Ave., Milwaukee, Wis.
Milwaukee Steam Appliance Co., West Allis, Wis.
Moloch Co., Kaukauna, Wis.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Ocean Shore Iron Works, 550 Eighth St., San Francisco, Calif.
Ohio InJector Co., S. Main St., Wadsworth, Ohio
Oil Well Supply Co., Pittsburgh, Pa.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Pelolin Co. of America, 1112 W. 37th St., Chicago, Illinois
Pitts & Kitts Mfg. & Supply Co., 91 7th Ave., New York, N. Y.
Plouff Co., 170 Summer St., Boston, Mass.
Wm. Powell Co., Cincinnati, Ohio
Scully Steel & Iron Co., Chicago, Ill.
John Simmons Co., 104-10 Center St., New York, N. Y.
Star Brass Mfg. Co., 53 Oliver St., Boston, Mass.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Union Iron Works, Selma, Ala.
Walworth Company, 88 Pearl St., Boston, Mass.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

VALVES, Breather

Oil Conservation Engineering Co., Cleveland, Ohio. See page 4.

VALVES, By Pass

C. F. Braun & Co., Alhambra, Cal. See pages 78-79.
Briggs Weaver Machinery Co., Dallas, Texas
Continental Supply Co., St. Louis, Missouri
Darling Valve & Mfg. Co., Williamsport, Pa.
Eddy Valve Co., Waterford, N. Y.
Fairbanks Co., 416-22 Broome St., New York, N. Y.
Greene Brothers, Wichita Falls, Texas. See page 61.
Griscom-Russell Co., 285 Madison Ave., New York, N. Y. See page 133.
Hydraulic Press Mfg. Co., Mt. Gilead, Ohio.
Jenkins Bros., 80 White St., New York, N. Y.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
The Kennedy Valve Mfg. Co., Elmira, N. Y.
Lalor Fuel Oil System Co., Baltimore, Md.
Lunkenheimer Co., Cincinnati, Ohio. See page 17.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
Mason Regulator Co., Milton, Mass.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
National Valve & Mfg. Co., 31st and Liberty, Pittsburgh, Pa.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Ohio InJector Co., S. Main St., Wadsworth, Ohio
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Plouff Co., 170 Summer St., Boston, Mass.
Wm. Powell Co., Cincinnati, Ohio
Scott Valve Mfg. Co., Detroit, Mich.
John Simmons Co., 104-10 Center St., New York, N. Y.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Henry Vogt Machine Co., Louisville, Ky. See page 5.
Walworth Company, 88 Pearl St., Boston, Mass.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

VALVES, Check

Albany Steam Trap Co., 317-319 N. Pearl St., Albany, N. Y.
Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
Baker Ice Machine Co., 3601 Evans St., Omaha, Nebr.
Barnett, Haentjens & Co., Pine and Buttonwood Sts., Hazleton, Pa.
H. Belfield Co., 435 N. Broad St., Philadelphia, Pa.
Bashlin Co., Warren, Pa.
Briggs Weaver Machinery Co., Dallas, Texas
Buckeye Iron & Brass Works, Dayton, Ohio
Chapman Valve Mfg. Co., Indian Orchard, Mass.
The Cochrane Corp., 3130 N. 17th St., Philadelphia, Pa.
Continental Supply Co., St. Louis, Missouri
Darling Valve & Mfg. Co., Williamsport, Pa.
Eddy Valve Co., Waterford, N. Y.
The Edward Valve & Mfg. Co., East Chicago, Ind.
Fairbanks Co., 416-22 Broome St., New York, N. Y.
Golden-Anderson Valve Specialty Co., 1228 Fulton Bldg., Pittsburgh, Pa.
Grinnell Co., Inc., Providence, R.I.
Hart Co., Inc., Williamsport, Pa.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Hydraulic Press Mfg. Co., Mt. Gilead, Ohio.
Jarecki Mfg. Co., Erie, Pa.
Jenkins Bros., 80 White St., New York, N. Y.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Kelly and Jones Co., Greensburg, Pa. See page 75.
The Kennedy Valve Mfg. Co., Elmira, N. Y.
Kerotest Mfg. Co., 2525 Liberty Ave., Pittsburgh, Pa.
The Ludlow Valve Mfg. Co., R. A. Long Bldg., Kansas City, Mo. See page 93.
Lunkenheimer Co., Cincinnati, Ohio. See page 17.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
Milwaukee Boiler Mfg. Co., 35th St. & National Ave., Milwaukee, Wis.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
National Valve & Mfg. Co., 31st and Liberty, Pittsburgh, Pa.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Ohio Brass Co., Mansfield, Ohio.
Ohio InJector Co., S. Main St., Wadsworth, Ohio
Oil Well Supply Co., Pittsburgh, Pa.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Petroleum Supply Co., Houston, Texas
Philadelphia Steel & Iron Co., 1008 Commercial Trust Bldg., Philadelphia, Pa.
Plouff Co., 170 Summer St., Boston, Mass.
Wm. Powell Co., Cincinnati, Ohio
The Randle Machinery Co., 1723 Power St., Cincinnati, Ohio
Reading Steel Castings Co., Reading, Pa.
Refinery Supply Co., Tulsa, Okla. See page 44.
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond Va.
Schutte & Koerting Co., 1165 Thompson St., Philadelphia, Pa. See page 149.
John Simmons Co., 104-10 Center St., New York, N. Y.
Star Brass Mfg. Co., 53 Oliver St., Boston, Mass.

Scott Valve Mfg. Co., Detroit, Mich.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Trill Indicator Co., Center St., Corry, Pa.
Union Iron Works, Selma, Ala.
Henry Vogt Machine Co., Louisville, Ky. See page 5.
Walworth Company, 88 Pearl St., Boston, Mass.
D. T. Williams Valve Co., Spring Grove Ave. & Township St., Cincinnati, Ohio. See page 35.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.
The Youngstown Sheet & Tube Co., Youngstown, Ohio

VALVE, Angle Check

Buckeye Iron & Brass Works, Dayton, Ohio

VALVES Check Swing

Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
Barnett, Haentjens & Co., Pine and Buttonwood Sts., Hazleton, Pa.
Briggs Weaver Machinery Co., Dallas, Texas
Buckeye Iron & Brass Works, Dayton, Ohio
Continental Supply Co., St. Louis, Missouri
Darling Valve & Mfg. Co., Williamsport, Pa.
Eclipse Fuel Engineering Co., Rockford, Ill.
Eddy Valve Co., Waterford, N. Y.
Fairbanks Co., 416-22 Broome St., New York, N. Y.
Golden-Anderson Valve Specialty Co., 1228 Fulton Bldg., Pittsburgh, Pa.
Grinnell Co., Inc., Providence, R.I.
Harrisburg Pipe & Pipe Bending Co., Houston, Texas
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Hydraulic Press Mfg. Co., Mt. Gilead, Ohio.
Jenkins Bros., 80 White St., New York, N. Y.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
The Kennedy Valve Mfg. Co., Elmira, N. Y.
Kerotest Mfg. Co., 2525 Liberty Ave., Pittsburgh, Pa.
The Ludlow Valve Mfg. Co., R. A. Long Bldg., Kansas City, Mo. See page 93.
Lunkenheimer Co., Cincinnati, Ohio. See page 17.
Maintenance Eng. Corp., 1802 Conti St., Houston, Texas. See page 150.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
Milwaukee Boiler Mfg. Co., 35th St. & National Ave., Milwaukee, Wis.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
National Valve & Mfg. Co., 31st and Liberty, Pittsburgh, Pa.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Ohio Brass Co., Mansfield, Ohio.
Ohio InJector Co., S. Main St., Wadsworth, Ohio
Oil Well Supply Co., Pittsburgh, Pa.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Petroleum Supply Co., Houston, Texas
Philadelphia Steel & Iron Co., 1008 Commercial Trust Bldg., Philadelphia, Pa.
Plouff Co., 170 Summer St., Boston, Mass.
Wm. Powell Co., Cincinnati, Ohio
The Randle Machinery Co., 1723 Power St., Cincinnati, Ohio
Reading Steel Castings Co., Reading, Pa.
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
Schutte & Koerting Co., 1165 Thompson St., Philadelphia, Pa. See page 149.
John Simmons Co., 104-10 Center St., New York, N. Y.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Union Iron Works, Selma, Ala.
Henry Vogt Machine Co., Louisville, Ky. See page 5.

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Walworth Company, 88 Pearl St., Boston, Mass.
D. T. Williams Valve Co., Spring Grove Ave. & Township St., Cincinnati, Ohio. See page 35.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.

VALVES, Chlorine

Kerotest Mfg. Co., 2525 Liberty Ave., Pittsburgh, Pa.

VALVES, Combined Back Pressure and Relief

Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
Baker Ice Machine Co., 3601 Evans St., Omaha, Nebr.
Boylston Steam Specialty Co., 116 W. Illinois St., Chicago, Ill.
Briggs Weaver Machinery Co., Dallas, Texas
Carbic Mfg. Co., Duluth, Minn.
The Cochrane Corp., 3130 N. 17th St., Philadelphia, Pa.
Continental Supply Co., St. Louis, Mo.
Fisher Governor Co., Marshalltown, Iowa. See page 81.
Jenkins Bros., 80 White St., New York, N. Y.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Kelley & Mueller, Inc., 34 W. Thirteenth St., New York, N. Y.
The Kennedy Valve Mfg. Co., Elmira, N. Y.
Lalor Fuel Oil System Co., Baltimore, Md.
Maintenance Eng. Corp., 1802 Conti St., Houston, Texas. See page 150.
McAlear Mfg. Co., 1901-07 Southwestern Ave., Chicago, Ill.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
National Valve & Mfg. Co., 31st and Liberty, Pittsburgh, Pa.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Pitts & Kitts Mfg. & Supply Co., 91 7th Ave., New York, N. Y.
Plouff Co., 170 Summer St., Boston, Mass.
tional Bank Bldg., Houston, Tex.
Wm. Powell Co., Cincinnati, Ohio
The J. A. Rossiter Co., Union Na-
Schutte & Koerting Co., 1165 Thompson St., Philadelphia, Pa. See page 149.
Scott Valve Mfg. Co., Detroit, Mich
John Simmons Co., 104-10 Center St., New York, N. Y.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St Louis, Mo.
Stickle Steam Specialties Co., Indianapolis, Ind.
Titusville Iron Works, Titusville, Pa.
Walworth Company, 88 Pearl St. Boston, Mass.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.

VALVES, Control

Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
Baker Ice Machine Co., 3601 Evans St., Omaha, Nebr.
H. Belfield Co., 435 N. Broad St. Philadelphia, Pa.
Briggs Weaver Machinery Co., Dallas, Texas
The Bristol Co., Waterbury, Conn. See page 154.
Brown Instrument Co., 4537 Wayne Ave., Philadelphia, Pa.
Continental Supply Co., St. Louis, Missouri
Cutler-Hammer Mfg. Co., Milwaukee, Wis.
Eclipse Fuel Engineering Co., Rockford, Ill.
Everlasting Valve Co., 1 Exchange Place, Jersey City, N. J.
Fisher Governor Co., Marshalltown, Iowa. See page 81.
Golden-Anderson Valve Specialty Co., 1228 Fulton Bldg., Pittsburgh, Pa.
Gorton & Lidgerwood Co., 96 Liberty St., New York, N. Y.
Greene Brothers, Wichita Falls, Texas. See page 61.
Hughes Tool Co., 300 Hughes St., Houston, Texas. See insert.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Kennedy Valve Mfg. Co., Elmyra, N. Y.
Lalor Fuel Oil System Co., Baltimore, Md.
Lunkenheimer Co., Cincinnati, O. See page 17.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
McAlear Mfg. Co., 1901-07 Southwestern Ave., Chicago, Ill.
McDonough Coal Saving Corp'n., 3955 Grand River Ave., Detroit, Mich.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Pitts & Kitts Mfg. & Supply Co., 91 7th Ave., New York, N. Y.
Plouff Co., 170 Summer St., Boston, Mass.
Wm. Powell Co., Cincinnati, Ohio
Powers Regulator Co., 2720 Greenview Ave., Chicago, Ill.
Refrigerating Specialties Co., 714 S. Sacramento Blvd., Chicago, Ill.
tional Bank Bldg., Houston, Tex.
Richmond Engineering Co. 935 Brook Ave., Box 514, Richmond Va.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex
Scharf Smoke Preventing Co., Ypsilant, Michigan.
John Simmons Co., 104-10 Center St., New York, N. Y.
Spencer Regulator Co., Cor. Derby & Liberty Sts., Salem, Mass.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St Louis, Mo.
Stickle Steam Specialties Co., Indianapolis, Ind.
C. J. Tagliabue Mfg. Co., 18 33rd St., Brooklyn, N. Y. See page 49.
Henry Vogt Machine Co., Louisville, Ky. See page 5.
Walworth Company, 88 Pearl St Boston, Mass.
Waters Governor Co., 141 Milk St. Boston, Mass.
D. T. Williams Valve Co., Spring Grove Ave. & Township St., Cincinnati, Ohio. See page 35.
Woodward, Wight & Co., Ltd New Orleans, La. See page 153

VALVES, Drop-Forged

Hydraulic Press Mfg. Co., Mt Gilead, Ohio.

VALVES—Dry Pipe (Sprinkler)

Central Automatic Sprinkler Co 5145 Delancey St., Philadelphia Pa.

VALVES, Electrically Operated

Briggs Weaver Machinery Co., Dallas, Texas
The Bristol Co., Waterbury, Conn. See page 154.
Brown Instrument Co., 4537 Wayne Ave., Philadelphia, Pa.
Chapman Valve Mfg. Co., Indian Orchard, Mass.
The Cochrane Corp., 3130 N. 17th St., Philadelphia, Pa.
Cutler-Hammer Mfg. Co., Milwaukee, Wis.
Eclipse Fuel Engineering Co., Rockford, Ill.
The Edward Valve & Mfg. Co., East Chicago, Ind.
Golden-Anderson Valve Specialty Co., 1228 Fulton Bldg., Pittsburgh, Pa.
Hughes Tool Co., 300 Hughes St., Houston, Texas. See insert.
Jenkins Bros., 80 White St., New York, N. Y.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
The Kennedy Valve Mfg. Co., Elmira, N. Y.
The Ludlow Valve Mfg. Co., R. A Long Bldg., Kansas City, Mo. See page 93.
Lunkenheimer Co., Cincinnati, Ohio. See page 17.
Maintenance Eng. Corp., 1802 Conti St., Houston, Texas. See page 150.
National Supply Co., Toledo, Ohio
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif
Plouff Co., 170 Summer St., Boston, Mass.
Wm. Powell Co., Cincinnati, Ohio
Reading Steel Castings Co., Reading, Pa.
Refrigerating Specialties Co., 714 S. Sacramento Blvd., Chicago, Ill.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Schutte & Koerting Co., 1165 Thompson St., Philadelphia, Pa. See page 149.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Walworth Company, 88 Pearl St., Boston, Mass.

VALVES, Float

Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
American Tank Co., Okla. City, Okla.
Atlas Valve Co., 282 South St., Newark, N. J.
H. Belfield Co., 435 N. Broad St., Philadelphia, Pa.
Briggs Weaver Machinery Co., Dallas, Texas
Missouri
Continental Supply Co., St. Louis
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas See page 160.
Defender Automatic Regulator Co. 709 Pine St., St. Louis, Mo.
Julian d'Este Co., 26 Canal St Boston, Mass.
Fisher Governor Co., Marshalltown Iowa. See page 81.
Golden-Anderson Valve Specialty Co., 1228 Fulton Bldg., Pittsburgh, Pa.
Arthur Harris & Co., 212 Curtis St., Chicago, Ill.
Kelley & Mueller, Inc., 34 W Thirteenth St., New York, N. Y
La Favorite Rubber Mfg. Co. Wagaraw Rd., Hawthorne, N. J
The Ludlow Valve Mfg. Co., R. A Long Bldg., Kansas City, Mo See page 93.
Mason Regulator Co., Milton, Mass
McAlear Mfg. Co., 1901-07 South western Ave., Chicago, Ill.
McDonough Coal Saving Corp'n 3955 Grand River Ave., Detroit Mich.
Metric Metal Works, Erie, Pa See pages 70-71.
Nason Manufacturing Company, 7 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohi
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Oil Well Supply Co., Pittsburgh Pa.
Henry B. Pancoast & Co., 940-96 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston Texas. See page 85.
Pitts & Kitts Mfg. & Supply Co. 91 7th Ave., New York, N. Y.
Plouff Co., 170 Summer St., Boston, Mass.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex
"S-C" Regulator Mfg. Co., Fostoria, Ohio.
Schutte & Koerting Co., 1165 Thompson St., Philadelphia, Pa. See page 149.
Southern Brass Mfg. Co., Houston Texas.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St Louis, Mo.
Stickle Steam Specialties Co., Indianapolis, Ind.
Therman Efficiency Co., 1210 Scarritt Bldg., Kansas City, Mo. See page 113.
Walworth Company, 88 Pearl St Boston, Mass.
Waters Governor Co., 141 Milk St. Boston, Mass.
Watts Regulator Company, 250-25 Lowell St., Lawrence, Mass.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.

VALVES, Foot

A. & F. Brown Co., 79 Barclay St., New York, N. Y.

VALVES, Forged Steel

The Edward Valve & Mfg. Co., East Chicago, Ind.

VALVES Gas

Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
American Gas Construction Co., Newton, Iowa
American Tank Co., Okla. City, Okla.
Barco Mfg. Co., 1801 Winnemac Ave., Chicago, Ill.
Bashlin Co., Warren, Pa.
H. Belfield Co., 435 N. Broad St. Philadelphia, Pa.
Briggs Weaver Machinery Co., Dallas, Texas
The Bristol Co., Waterbury, Conn. See page 154.
Burdett Mfg. Co., 309 St. Johns Court, Chicago, Ill.
Continental Supply Co., St. Louis, Missouri
Darling Valve & Mfg. Co., Williamsport, Pa.
Defender Automatic Regulator Co., 709 Pine St., St. Louis, Mo.
Eddy Valve Co., Waterford, N. Y.
Everlasting Valve Co., 1 Exchange Place, Jersey City, N. J.
Fairbanks Co., 416-22 Broome St., New York, N. Y.
Greene Brothers, Wichita Falls, Texas. See page 61.
Hart Co., Inc., Williamsport, Pa.
Homestead Valve Mfg. Co., Inc., Homestead, Pa.
Jenkins Bros., 80 White St., New York, N. Y.
Kelley & Mueller, Inc., 34 W. Thirteenth St., New York. N. Y.
The Kennedy Valve Mfg. Co., Elmira, N. Y.
Kerotest Mfg. Co., 2525 Liberty Ave., Pittsburgh, Pa.
The Ludlow Valve Mfg. Co., R. A. Long Bldg., Kansas City, Mo. See page 93.
McAlear Mfg. Co., 1901-07 Southwestern Ave., Chicago, Ill.
Metric Metal Works, Erie, Pa. See pages 70-71.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Ohio Brass Co., Mansfield, Ohio.
Ohio Injector Co., S. Main St., Wadsworth, Ohio.
Oil Well Supply Co., Pittsburgh, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Plouff Co., 170 Summer St., Boston, Mass.
Wm. Powell Co., Cincinnati, Ohio
Powers Regulator Co., 2720 Greenview Ave., Chicago, Ill.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Sweet & Doyle Foundry & Machine Co., Green Island, Troy, N. Y. See page 45.
Walworth Company, 88 Pearl St., Boston, Mass.
Western Gas Construction Co., Fort Wayne, Ind.
Wilgus Mfg. Co., 1732 E. Sixteenth St., Los Angeles, Calif.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

VALVES, Gasoline Relief

Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
American Schaeffer & Budenberg Corp., Berry & S. 5th St., Brooklyn, N. Y. See page 153.
Ashton Valve Co., 161 First St., Cambridge, Boston, Mass.
Briggs Weaver Machinery Co., Dallas, Texas
The Chaplin-Fulton Co., 28 Penn Ave., Pittsburgh, Pa. See page 159.
The Cochrane Corp., 3130 N. 17th St., Philadelphia, Pa.
Continental Supply Co., St. Louis, Missouri
Golden-Anderson Valve Specialty Co., 1228 Fulton Bldg., Pittsburgh, Pa.
Greene Brothers, Wichita Falls, Texas. See page 61.
Kelley & Mueller, Inc., 34 W. Thirteenth St., New York, N. Y.
National Supply Co., Toledo, Ohio
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Plouff Co., 170 Summer St., Boston, Mass.
Wm. Powell Co., Cincinnati, Ohio
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Scott Valve Mfg. Co., Detroit, Mich.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Walworth Company, 88 Pearl St., Boston, Mass.

VALVES Gate

Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.

American District Steam Co., N Tonawanda, N. Y.
The Barber Asphalt Co., 1600 Arch St., Philadelphia, Pa.
Briggs Weaver Machinery Co., Dallas, Texas
Buckeye Iron & Brass Works, Dayton, Ohio
Butler Mfg. Co., 1124 Grand Ave., Kansas City, Mo.
Chapman Valve Mfg. Co., Indian Orchard, Mass.
Continental Supply Co., St. Louis, Missouri
Darling Valve & Mfg. Co., Williamsport, Pa.
Detroit Lubricator Co., 5938 Trumbull Ave., Detroit, Mich.
Eclipse Fuel Engineering Co., Rockford, Ill.
Eddy Valve Co., Waterford, N. Y.
Everlasting Valve Co., 1 Exchange Place, Jersey City, N. J.
Fairbanks Co., 416-22 Broome St., New York, N. Y.
Gorton & Lidgerwood Co., 96 Liberty St., New York, N. Y.
Grinnell Co., Inc., Providence, R.I.
Harrisburg Pipe & Pipe Bending Co., Houston, Texas
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Hughes Tool Co., 300 Hughes St., Houston, Texas. See insert.
Illinois Mallable Iron Co., 1801 Diversey Blvd., Chicago, Ill.
Independent Foundry Co., 73 York St., Portland, Ore.
Jarecki Mfg. Co., Erie, Pa.
Jenkins Bros., 80 White St., New York, N. Y.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Kelly and Jones Co., Greensburg, Pa. See page 75.
The Kennedy Valve Mfg. Co., Elmira, N. Y.
Kerotest Mfg. Co., 2525 Liberty Ave., Pittsburgh, Pa.
The Ludlow Valve Mfg. Co., R. A. Long Bldg., Kansas City, Mo. See page 93.
Lunkenheimer Co., Cincinnati, Ohio. See page 17.
Maintenance Eng. Corp., 1802 Conti St., Houston, Texas. See page 150.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
McDonald Mfg. Co., Dubuque, Ia. See back cover.
Milwaukee Boiler Mfg. Co., 35th St. & National Ave., Milwaukee, Wis.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Wm. W. Nugent & Co., 410-412 No. Hermitage Ave., Chicago, Ill.
Ohio Brass Co., Mansfield, Ohio.
Ohio Injector Co., S. Main St., Wadsworth, Ohio
Oil Well Supply Co., Pittsburgh, Pa.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Philadelphia Steel & Iron Co., 1008 Commercial Trust Bldg., Philadelphia, Pa.
Plouff Co., 170 Summer St., Boston, Mass.
Wm. Powell Co., Cincinnati, Ohio
Reading Steel Castings Co., Reading, Pa.
Scott Valve Mfg. Co., Detroit, Mich.
John Simmons Co., 104-10 Center St., New York, N. Y.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Union Iron Works, Selma, Ala.
Vogt Brothers Mfg. Co., 1402 W. Main St., Louisville, Ky.
Henry Vogt Machine Co., Louisville, Ky. See page 5.
Walworth Company, 88 Pearl St., Boston, Mass.
Western Gas Construction Co., Fort Wayne, Ind.
D. T. Williams Valve Co., Spring Grove Ave. & Township St., Cincinnati, Ohio. See page 35.
R. D. Wood & Co., 400 Chestnut St., Philadelphia, Pa.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.

VALVES, Swing Gate

Buckeye Iron & Brass Works, Dayton, Ohio

VALVES, Globe

Albany Steam Trap Co., 317-319 N. Pearl St., Albany, N. Y.
Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
Baker Ice Machine Co., 3601 Evans St., Omaha, Nebr.
Bashlin Co., Warren, Pa.
H. Belfield Co., 435 N. Broad St. Philadelphia, Pa.
Briggs Weaver Machinery Co., Dallas, Texas
The Bristol Co., Waterbury, Conn
Carbondale Machine Co., Carbondale, Pa.
Continental Supply Co., St. Louis, Missouri
Detroit Lubricator Co., 5938 Trumbull Ave., Detroit, Mich.
Eclipse Fuel Engineering Co., Rockford, Ill.
The Edward Valve & Mfg. Co., East Chicago, Ind.
Fairbanks Co., 416-22 Broome St., New York, N. Y.
Grinnell Co., Inc., Providence, R.I
Hart Co., Inc., Williamsport, Pa.
Homestead Valve Mfg. Co., Inc., Homestead, Pa.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Hughes Tool Co., 300 Hughes St., Houston, Texas. See insert.
Hydraulic Press Mfg. Co., Mt Gilead, Ohio.
Illinois Mallable Iron Co., 1801 Diversey Blvd., Chicago, Ill.
Jenkins Bros., 80 White St., New York, N. Y.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
The Kennedy Valve Mfg. Co., Elmira, N. Y.
Lunkenheimer Co., Cincinnati, Ohio. See page 17.
Maintenance Eng. Corp., 1802 Conti St., Houston, Texas. See page 150.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City
Milwaukee Boiler Mfg. Co., 35th St. & National Ave., Milwaukee, Wis.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
National Valve & Mfg. Co., 31st and Liberty, Pittsburgh, Pa.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Wm. W. Nugent & Co., 410-412 No. Hermitage Ave., Chicago, Ill.
Ohio Brass Co., Mansfield, Ohio.
Ohio Injector Co., S. Main St., Wadsworth, Ohio
Oil Well Supply Co., Pittsburgh, Pa.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Petroleum Supply Co., Houston, Texas
Philadelphia Steel & Iron Co., 1008 Commercial Trust Bldg., Philadelphia, Pa.
Plouff Co., 170 Summer St., Boston, Mass.
Wm. Powell Co., Cincinnati, Ohio
Powers Regulator Co., 2720 Greenview Ave., Chicago, Ill.
The Randle Machinery Co., 1723 Power St., Cincinnati, Ohio
Reading Steel Castings Co., Reading, Pa.
Scott Valve Mfg. Co., Detroit, Mich.
John Simmons Co., 104-10 Center St., New York, N. Y.
Star Brass Mfg. Co., 53 Oliver St., Boston, Mass.
Union Iron Works, Selma, Ala.
Henry Vogt Machine Co., Louisville, Ky. See page 5.
Walworth Company, 88 Pearl St., Boston, Mass.
D. T. Williams Valve Co., Spring Grove Ave. & Township St., Cincinnati, Ohio. See page 35.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.

VALVES, Globe, Angle and Cross

Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
Baker Ice Machine Co., 3601 Evans St., Omaha, Nebr.
H. Belfield Co., 435 N. Broad St., Philadelphia, Pa.
Briggs Weaver Machinery Co., Dallas, Texas
Carbondale Machine Co., Carbondale, Pa.
Grinnell Co., Inc., Providence, R.I.
The Edward Valve & Mfg. Co., East Chicago, Ind.
Fairbanks Co., 416-22 Broome St., New York, N. Y.
Hart Co., Inc., Williamsport, Pa.
Hughes Tool Co., 300 Hughes St., Houston, Texas. See insert.
Jarecki Mfg. Co., Erie, Pa.
Jenkins Bros., 80 White St., New York, N. Y.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Kelly and Jones Co., Greensburg, Pa. See page 75.
The Kennedy Valve Mfg. Co., Elmira, N. Y.
Lunkenheimer Co., Cincinnati, Ohio. See page 17.
Maintenance Eng. Corp., 1802 Conti St., Houston, Texas. See page 150.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
Morrison Bros., Dubuque, Iowa.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
National Valve & Mfg. Co., 31st and Liberty, Pittsburgh, Pa.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Wm. W. Nugent & Co., 410-412 No. Hermitage Ave., Chicago, Ill.
Ohio Brass Co., Mansfield, Ohio.
Ohio Injector Co., S. Main St., Wadsworth, Ohio
Oil Well Supply Co., Pittsburgh, Pa.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Petroleum Supply Co., Houston, Texas
Philadelphia Steel & Iron Co., 1008 Commercial Trust Bldg., Philadelphia, Pa.
Plouff Co., 170 Summer St., Boston, Mass.
Wm. Powell Co., Cincinnati, Ohio
The Randle Machinery Co., 1723 Power St., Cincinnati, Ohio
Reading Steel Castings Co., Reading, Pa.
Schutte & Koerting Co., 1165 Thompson St., Philadelphia, Pa. See page 149.
Scott Valve Mfg. Co., Detroit, Mich.
John Simmons Co., 104-10 Center St., New York, N. Y.
Star Brass Mfg. Co., 53 Oliver St. Boston, Mass.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Union Iron Works, Selma, Ala.
Henry Vogt Machine Co., Louisville, Ky. See page 5.
Walworth Company, 88 Pearl St. Boston, Mass.
D. T. Williams Valve Co., Spring Grove Ave. & Township St., Cincinnati, Ohio. See page 35.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.

VALVES, Hard Lead

United Lead Co., 111 Broadway, New York, N. Y.

VALVES, Hose

H. Belfield Co., 435 N. Broad St., Philadelphia, Pa.
Briggs Weaver Machinery Co., Dallas, Texas
A. W. Cadman Mfg. Co., 2814 Smallman St., Pittsburgh, Pa.
Chapman Valve Mfg. Co., Indian Orchard, Mass.
Darling Valve & Mfg. Co., Williamsport, Pa.
Eddy Valve Co., Waterford, N. Y.
Fairbanks Co., 416-22 Broome St., New York, N. Y.
Grinnell Co., Inc., Providence, R.I.
Jenkins Bros., 80 White St., New York, N. Y.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Kelly and Jones Co., Greensburg, Pa. See page 75.
The Kennedy Valve Mfg. Co., Elmira, N. Y.
The Ludlow Valve Mfg. Co., R. A. Long Bldg., Kansas City, Mo. See page 93.
Lunkenheimer Co., Cincinnati, Ohio. See page 17.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Ohio Injector Co., S. Main St., Wadsworth, Ohio.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Plouff Co., 170 Summer St., Boston, Mass.
Wm. Powell Co., Cincinnati, Ohio
Scott Valve Mfg. Co., Detroit, Mich.
John Simmons Co., 104-10 Center St., New York, N. Y.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Walworth Company, 88 Pearl St., Boston, Mass.
D. T. Williams Valve Co., Spring Grove Ave. & Township St., Cincinnati, Ohio. See page 35.
R. D. Wood & Co., 400 Chestnut St., Philadelphia, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

VALVES, Hot Oil and Tar

Anchor Packing Co., Lafayette Bldg., Philadelphia, Pa.
Barco Mfg. Co., 1801 Winnemac Ave., Chicago, Ill.
Briggs Weaver Machinery Co., Dallas, Texas
Everlasting Valve Co., 1 Exchange Place, Jersey City, N. J.
Greene Brothers, Wichita Falls, Texas. See page 61.
Hart Co., Inc., Williamsport, Pa.
Homestead Valve Mfg. Co., Inc., Homestead, Pa.
Hughes Tool Co., 300 Hughes St., Houston, Texas. See insert.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
The Kennedy Valve Mfg. Co., Elmira, N. Y.
Kerotest Mfg. Co., 2525 Liberty Ave., Pittsburgh, Pa.
Geo. W. Knowlton Rubber Co., 60 Pearl St., Boston, Mass.
La Favorite Rubber Mfg. Co., Wagaraw Rd., Hawthorne, N. J.
Lake Erie Mfg. Co., Inc., 192-198 Chicago St., Buffalo, N. Y.
The Ludlow Valve Mfg. Co., R. A. Long Bldg., Kansas City, Mo. See page 93.
Maintenance Eng. Corp., 1802 Conti St., Houston, Texas.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Plouff Co., 170 Summer St., Boston, Mass.
Wm. Powell Co., Cincinnati, Ohio
Reading Steel Castings Co., Reading, Pa.
Rue Mfg. Co., 228 Cherry St. Philadelphia, Pa.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Henry Vogt Machine Co., Louisville, Ky. See page 5.
Walworth Company, 88 Pearl St., Boston, Mass.
Wilson-Snyder Manufacturing Co., Pittsburgh, Pa.
Witherup Cork Packing Co., Beaumont, Texas.

VALVES, Hydrogen

Kerotest Mfg. Co., 2525 Liberty Ave., Pittsburgh, Pa.

VALVES, Lead Lined

Greene Brothers, Wichita Falls, Texas. See page 61.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Plouff Co., 170 Summer St., Boston, Mass.
Schutte & Koerting Co., 1165 Thompson St., Philadelphia, Pa. See page 149.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.

VALVES, Lever

Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
American Tank Co., Okla. City, Okla.
Briggs Weaver Machinery Co., Dallas, Texas
Darling Valve & Mfg. Co., Williamsport, Pa.
Eddy Valve Co., Waterford, N. Y.
Everlasting Valve Co., 1 Exchange Place, Jersey City, N. J.
Fisher Governor Co., Marshalltown, Iowa. See page 81.

Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Jenkins Bros., 80 White St., New York, N. Y.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
The Kennedy Valve Mfg. Co., Elmira, N. Y.
The Ludlow Valve Mfg. Co., R. A. Long Bldg., Kansas City, Mo. See page 93.
Lunkenheimer Co., Cincinnati, Ohio. See page 17.
Mason Regulator Co., Milton, Mass.
McAlear Mfg. Co., 1901-07 Southwestern Ave., Chicago, Ill.
McDonough Coal Saving Corp'n., 3955 Grand River Ave., Detroit, Mich.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Cal f.
Ohio InJector Co., S. Main St., Wadsworth, Ohio
Peden Iron & Steel Co., Houston, Texas. See page 85.
Plouff Co., 170 Summer St., Boston, Mass.
Wm. Powell Co., Cincinnati, Ohio
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Schutte & Koerting Co., 1165 Thompson St., Philadelphia, Pa. See page 149.
Scott Valve Mfg. Co., Detroit, Mich.
John Simmons Co., 104-10 Center St., New York, N. Y.
Stewart Machine Co., Buder Bldg., Seventh & Market Sts., St. Louis Mo.
Titusville Iron Works, Titusville, Pa.
Walworth Company, 88 Pearl St., Boston, Mass.
D. T. Williams Valve Co., Spring Grove Ave. & Township St., Cincinnati, Ohio. See page 35.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153

VALVES, Lever Angle

Buckeye Iron & Brass Works, Dayton, Ohio

VALVES, Nickel Seat

D. T. Williams Valve Co., Spring Grove Ave. & Township St., Cincinnati, Ohio. See page 35.

VALVES, Non-Return

H. Belfield Co., 435 N. Broad St., Philadelphia, Pa.
Briggs Weaver Machinery Co., Dallas, Texas
Chapman Valve Mfg. Co., Indian Orchard, Mass.
Continental Supply Co., St. Louis, Missouri
The Edward Valve & Mfg. Co., East Chicago, Ind.
Elliott Company, Jeannette, Pa. See page 101.
Golden-Anderson Valve Specialty Co., 1228 Fulton Bldg., Pittsburgh, Pa.
Hart Co., Inc., Williamsport, Pa.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Jarecki Mfg. Co., Erie, Pa.
Jenkins Bros., 80 White St., New York, N. Y.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Kelly and Jones Co., Greensburg, Pa. See page 75.
The Kennedy Valve Mfg. Co., Elmira, N. Y.
Lunkenheimer Co., Cincinnati, Ohio. See page 17.
Maintenance Eng. Corp., 1802 Conti St., Houston, Texas. See page 150.
McAlear Mfg. Co., 1901-07 Southwestern Ave., Chicago, Ill.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
National Valve & Mfg. Co., 31st and Liberty, Pittsburgh, Pa.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Cal f.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Plouff Co., 170 Summer St., Boston, Mass.
Wm. Powell Co., Cincinnati, Ohio
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Schutte & Koerting Co., 1165 Thompson St., Philadelphia, Pa. See page 149.
Scott Valve Mfg. Co., Detroit, Mich.
John Simmons Co., 104-10 Center St., New York, N. Y.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Walworth Company, 88 Pearl St., Boston, Mass.
D. T. Williams Valve Co., Spring Grove Ave. & Township St., Cincinnati, Ohio. See page 35.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.

VALVES, Oil Control

American Tank Co., Okla. City, Okla.
Barco Mfg. Co., 1801 Winnemac Ave., Chicago, Ill.
Briggs Weaver Machinery Co., Dallas, Texas
The Bristol Co., Waterbury, Conn. See page 154.
Brown Instrument Co., 4537 Wayne Ave., Philadelphia, Pa.
Everlasting Valve Co., 1 Exchange Place, Jersey City, N. J.
Greene Brothers, Wichita Falls Texas. See page 61.
Homestead Valve Mfg. Co., Inc., Homestead, Pa.
Hughes Tool Co., 300 Hughes St., Houston, Texas. See insert.
Kerotest Mfg. Co., 2525 Liberty Ave., Pittsburgh, Pa.
Lunkenheimer Co., Cincinnati, Ohio See page 17.
McDonough Coal Saving Corp'n. 3955 Grand River Ave., Detroit, Mich.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Airoil Burner Co., 9th and Thompson Sts., Philadelphia, Pa. See page 20.
National Supply Co., Toledo, Ohio
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Cal f.
Wm. W. Nugent & Co., 410-412 No. Hermitage Ave., Chicago, Ill
Plouff Co., 170 Summer St., Boston, Mass.
Wm. Powell Co., Cincinnati, Ohio
Refinery Supply Co., Tulsa, Okla. See page 44.
Refrigerating Specialties Co., 714 S Sacramento Blvd., Chicago, Ill.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex
Rue Mfg. Co., 228 Cherry St Philadelphia. Pa.
Schutte & Koerting Co., 1165 Thompson, St., Philadelphia, Pa. See page 149.
Stewart Machinery Co.,Buder Bldg., Seventh & Market Sts., St. Louis Mo.
Henry Vogt Machine Co., Louisville, Ky. See page 5.
Walworth Company, 88 Pearl St., Boston, Mass.
Wilgus Mfg. Co., 1732 E. Sixteenth St., Los Angeles, Calif.
G. E. Witt Co., Inc., 862-64 Howard St., San Francisco, Calif.

VALVES, Oxygen

Kerotest Mfg. Co., 2525 Liberty Ave., Pittsburgh, Pa.

VALVES, Plate

Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Cal f.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.

VALVES, Plug

Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
Barco Mfg. Co., 1801 Winnemac Ave., Chicago, Ill.
Barrett, Haentjens & Co., Pine and Buttonwood Sts., Hazleton, Pa.
Briggs Weaver Machinery Co., Dallas, Texas
A. W. Cadman Mfg. Co., 2814 Smallman St., Pittsburgh, Pa.
Chapman Valve Mfg. Co., Indian Orchard, Mass.
Fairbanks Co., 416-22 Broome St., New York, N. Y.
Greene Brothers, Wichita Falls Texas. See page 61.
Homestead Valve Mfg. Co., Inc., Homestead, Pa.
Judson Governor Co., Rochester, New York.
Kelly and Jones Co., Greensburg, Pa. See page 75.
Lunkenheimer Co., Cincinnati, O. See page 17.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y
National Supply Co., Toledo, Ohio
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Cal f.
Plouff Co., 170 Summer St., Boston, Mass.
Wm. Powell Co., Cincinnati, Ohio
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Henry Vogt Machine Co., Louisville, Ky. See page 5.
Walworth Company, 88 Pearl St., Boston, Mass.
D. T. Williams Valve Co., Spring Grove Ave. & Township St., Cincinnati, Ohio. See page 35.

VALVES, Lubricated Plug

Merco Nordstrom Valve Co., Inc., 121 2nd St., San Francisco, Cal.
United Lead Co., 111 Broadway, New York, N. Y.

VALVES, Pump

Aldrich Pump Co., Foot of Pine St., Allentown, Pa.
Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
Anchor Packing Co., Lafayette Bldg., Philadelphia, Pa.
Atlas Valve Co., 282 South St., Newark, N. J.
Austin-Mason Co., 15 Park Row, New York, N. Y.
Briggs Weaver Machinery Co., Dallas, Texas
Stewart R. Browne Mfg. Co., New York, N. Y.
Continental Supply Co., St. Louis, Missouri
Crandall Packing Co., Palmyra, New York
Diamond Rubber Co., Inc., Akron, Ohio.
R. & J. Dick Co., Inc., Passaic, N. J.
Edison Packing & Sales Co., 234 State St., Boston, Mass.
Excelsior Valve Co., 106-108 Fulton St., New York, N. Y.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Hydraulic Press Mfg. Co., Mt Gilead, Ohio.
Janos Asbestos Co., 26 Cortlandt St., New York, N. Y.
Jenkins Bros., 80 White St., New York, N. Y.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Kelly and Jones Co., Greensburg, Pa. See page 75.
Geo. W. Knowlton Rubber Co., 60 Pearl St., Boston, Mass.
Lake Erie Mfg. Co., Inc., 192-198 Chicago St., Buffalo, N. Y.
Mission Sales Co., 827 First Nat Bank Bldg., Houston, Texas.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, Ohio
National Valve & Mfg. Co., 31st and Liberty, Pittsburgh, Pa.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Cal f.
New York Belting & Packing Co. 91-93 Chamber St., New York, N. Y.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Pioneer Rubber Mills, 353 Sacramento St., San Francisco, Calif.
J. E. Rhoads & Sons, 35 N. Sixth St., Philadelphia, Pa.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
St. Louis Pump & Equipment Co., St. Louis, Mo.
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
U. S. Indestructible Gasket Co., 829 E. 15th St., Brooklyn, N. Y.
Voorhees Rubber Mfg. Co., 20 Bostwick Ave., Jersey City, N.J.
Walworth Company, 88 Pearl St., Boston, Mass.
Waters Governor Co., 141 Milk St., Boston, Mass.
William Gauge Co., 543 Fourth Ave., Pittsburgh, Pa.
Witherup Cork Packing Co., Beaumont, Texas.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

VALVE, Reducing

Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
American District Steam Co., N. Tonawanda, N. Y.
Atlas Valve Co., 282 South St., Newark, N. J.
H. Belfield Co., 435 N. Broad St., Philadelphia, Pa.
Boylston Steam Specialty Co., 116 W. Illinois St., Chicago, Ill.
Briggs Weaver Machinery Co., Dallas, Texas
Burdett Mfg. Co., 309 St. Johns Court, Chicago, Ill.
The Chaplin-Fulton Co., 28 Penn Ave., Pittsburgh, Pa. See page 159.
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Defender Automatic Regulator Co., 709 Pine St., St. Louis, Mo.
C. A. Dunham Co., The Dunham Bldg., 450 E. Ohio St., Chicago, Illinois
Julian d'Este Co., 26 Canal St., Boston, Mass.
Fisher Governor Co., Marshalltown, Iowa. See page 81.
Golden-Anderson Valve Specialty Co., 1228 Fulton Bldg., Pittsburgh, Pa.
Greene Brothers, Wichita Falls, Texas. See page 61.
Hydraulic Press Mfg. Co., Mt. Gilead, Ohio.
Jenkins Bros., 80 White St., New York, N. Y.
Judson Governor Co., Rochester, New York.
Kelley & Mueller, Inc., 34 W. Thirteenth St., New York, N. Y.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Leslie Co., Lyndhurst, N. J.
Maintenance Engineering Co., 1802 Conti St., Houston, Texas. See page 150.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
Mason Regulator Co., Milton, Mass.
McAlear Mfg. Co., 1901-07 Southwestern Ave., Chicago, Ill.
Modern Engineering Co., 3411-13 Pine Blvd., St. Louis, Mo. See page 141.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y
National Supply Co., Toledo, O.
National Valve & Mfg. Co., 31st and Liberty, Pittsburgh, Pa.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Cal f.
Oxweld Acetylene Co., Long Island City, L. I., N. Y.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Pelolin Co. of America, 1112 W. 37th St., Chicago, Illinois
Pitts & Kitts Mfg. & Supply Co., 91 7th Ave., New York, N. Y.
Plouff Co., 170 Summer St., Boston, Mass.
Powers Regulator Co., 2720 Greenview Ave., Chicago, Ill
Refinery Supply Co., Tulsa, Okla. See page 44.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
"S-C" Regulator Mfg. Co., Fostoria, Ohio.
Schutte & Koerting Co., 1165 Thompson St., Philadelphia, Pa. See page 149.
John Simmons Co., 104-10 Center St., New York, N. Y.
C. E. Squires Co., E. Fortieth St. & Kelley Ave., Cleveland, Ohio.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Stickle Steam Specialties Co., Indianapolis, Ind.
C. J. Tagliabue Mfg. Co., 18 33rd St., Brooklyn, N. Y. See page 49.
Walworth Company, 88 Pearl St., Boston, Mass.
Waters Governor Co., 141 Milk St., Boston, Mass.
Watson & McDaniel Co., 146 N. Seventh St., Philadelphia, Pa.
Watts Regulator Company, 250-252 Lowell St., Lawrence, Mass.
Wilgus Mfg. Co., 1732 E. Sixteenth St., Los Angeles, Calif.
G. E. Witt Co., Inc., 862-64 Howard St., San Francisco, Calif.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.

VALES, Refinery Steel

Kerotest Mfg. Co., 2525 Liberty Ave., Pittsburgh, Pa.

VALVES, Regulating

Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
American Tank Co., Okla. City, Okla.
Atlas Valve Co., 282 South St., Newark, N. J.
H. Belfield Co., 435 N. Broad St., Philadelphia, Pa.
Boylston Steam Specialty Co., 116 W. Illinois St., Chicago, Ill.

Briggs Weaver Machinery Co., Dallas, Texas
The Bristol Co., Waterbury, Conn. See page 154.
Brown Instrument Co., 4537 Wayne Ave., Philadelphia, Pa.
Burdett Mfg. Co., 309 St. Johns Court, Chicago, Ill.
The Chaplin-Fulton Co., 28 Penn Ave., Pittsburgh, Pa. See page 159.
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Defender Automatic Regulator Co., 709 Pine St., St. Louis, Mo.
Julian d'Este Co., 26 Canal St., Boston, Mass.
Fisher Governor Co., Marshalltown, Iowa. See page 81.
Golden-Anderson Valve Specialty Co., 1228 Fulton Bldg., Pittsburgh, Pa.
Greene Brothers, Wichita Falls, Texas. See page 61.
Jenkins Bros., 80 White St., New York, N. Y.
Kelley & Mueller, Inc., 34 W. Thirteenth St., New York, N. Y.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Kelly and Jones Co., Greensburg Pa. See page 75.
Lalor Fuel Oil System Co., Baltimore, Md.
Leslie Co., Lyndhurst, N. J.
Lunkenheimer Co., Cincinnati, O. See page 17.
Maintenance Eng. Corp., 1802 Conti St., Houston, Texas. See page 150.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
Mason Regulator Co., Milton, Mass.
McAlear Mfg. Co., 1901-07 Southwestern Ave., Chicago, Ill.
McDonough Coal Saving Corp'n., 3955 Grand River Ave., Detroit, Mich.
Modern Engineering Co., 3411-13 Pine Blvd., St. Louis, Mo. See page 141.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, O.
National Valve & Mfg. Co., 31st and Liberty, Pittsburgh, Pa.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Plouff Co., 170 Summer St., Boston, Mass.
Wm. Powell Co., Cincinnati, Ohio
Powers Regulator Co., 2720 Greenview Ave., Chicago, Ill.
Refinery Supply Co., Tulsa, Okla See page 44.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex
"S-C" Regulator Mfg. Co., Fostoria, Ohio.
C. E. Squires Co., E. Fortieth St & Kelley Ave., Cleveland, Ohio.
Stewart Machinery Co., Ruder Bldg., Seventh & Market Sts., St. Louis, Mo.
Stickle Steam Specialties Co., Indianapolis, Ind.
C. J. Tagliabue Mfg. Co., 18 33rd St., Brooklyn, N. Y. See page 49.
Taylor Instrument Co., Rochester. N. Y. See page 160.
Walworth Company, 88 Pearl St., Boston, Mass.
Waters Governor Co., 141 Milk St., Boston, Mass.
Watson & McDaniel Co., 146 N. Seventh St., Philadelphia, Pa.
Wilgus Mfg. Co., 1732 E. Sixteenth St., Los Angeles, Calif.
D. T. Williams Valve Co., Spring Grove Ave. & Township St., Cincinnati, Ohio. See page 35.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

VALVES, Relief

Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
American Schaeffer & Budenberg Corp., Berry & S. 5th St., Brooklyn, N. Y. See page 153.
Ashton Valve Co., 161 First St., Cambridge, Boston, Mass.
Baker Ice Machine Co., 3601 Evans St., Omaha, Nebr.
Black, Sivalls & Bryson, Bartlesville, Okla.
Boylston Steam Specialty Co., 116 W. Illinois St., Chicago, Ill.
Briggs Weaver Machinery Co., Dallas, Texas
The Chaplin-Fulton Co., 28 Penn Ave., Philadelphia, Pa. See page 159.
Carbondale Machine Co., Carbondale, Pa.
The Cochrane Corp., 3130 N. 17th St., Philadelphia, Pa.
Continental Supply Co., St. Louis, Missouri
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Fisher Governor Co., Marshalltown, Iowa. See page 81.
Golden-Anderson Valve Specialty Co., 1228 Fulton Bldg., Pittsburgh, Pa.
Greene Brothers, Wichita Falls, Texas. See page 61.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Hydraulic Press Mfg. Co., Mt. Gilead, Ohio.
Jenkins Bros., 80 White St., New York, N. Y.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Kelley & Mueller, Inc., 34 W. Thirteenth St., New York, N. Y.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
The Kennedy Valve Mfg. Co., Elmira, N. Y.
Kunkle Valve Co., 121 No. Clinton St., Ft. Wayne, Ind.
Lalor Fuel Oil System Co., Baltimore, Md.
Lunkenheimer Co., Cincinnati, Ohio See page 17.
The Ludlow Valve Mfg. Co., R. A Long Bldg., Kansas City, Mo. See page 93.
Maintenance Eng. Corp., 1802 Conti St., Houston, Texas. See page 150.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
McAlear Mfg. Co., 1901-07 Southwestern Ave., Chicago, Ill.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, O.
National Valve & Mfg. Co., 31st and Liberty, Pittsburgh, Pa.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Oil Conservation Engineering Co Cleveland, Ohio. See page 4.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peabody Engineering Corp., 110 E Forty Second St., New York, N. Y.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Pitts & Kitts Mfg. & Supply Co. 91 7th Ave., New York, N. Y.
Plouff Co., 170 Summer St., Boston, Mass.
Wm. Powell Co., Cincinnati, Ohio
Refrigerating Specialties Co., 714 S Sacramento Blvd., Chicago, Ill.
The P. H. & F. M. Roots Co. Connersville, Ind. See inside front cover.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex
"S-C" Regulator Mfg. Co., Fostoria, Ohio.
Scott Valve Mfg. Co., Detroit, Mich
John Simmons Co., 104-10 Center St., New York, N. Y.
Simplex Valve & Meter Co., 2005 S. 68th St., Philadelphia, Pa.
Star Brass Mfg. Co., 53 Oliver St., Boston, Mass.
Stewart Machinery Co., Ruder Bldg., Seventh & Market Sts., St. Louis, Mo.
Stickle Steam Specialties Co., Indianapolis, Ind.
Thermal Efficiency Co., 1210 Scarritt Bldg., Kansas City, Mo. See page 113.
Union Water Meter Co., Worcester, Mass.
Walworth Company, 88 Pearl St., Boston, Mass.
Watson & McDaniel Co., 146 N. Seventh St., Philadelphia, Pa.
Westcott & Greis, Inc., Tulsa, Okla. See page 15.
G. E. Witt Co., Inc., 862-64 Howard St., San Francisco, Calif.
Woodward, Wight & Co., Ltd New Orleans, La. See page 153.

VALVES, Reversible Seat

D. T. Williams Valve Co., Spring Grove Ave. & Township St., Cincinnati, Ohio. See page 35.

VALVES, Rubber

Adkins Young & Allen Co., 561 Washington Blvd., Chicago, Ill
Anchor Packing Co., Lafayette Bldg., Philadelphia, Pa.
Austin-Mason Co., 15 Park Row, New York, N. Y.

Briggs Weaver Machinery Co., Dallas, Texas
Stewart R. Browne Mfg. Co., New York, N. Y.
Continental Supply Co., St. Louis, Missouri
Crandall Packing Co., Palmyra, New York
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Garlock Packing Co., 50 Main St., Palmyra, N. Y. See page 67.
The Dardoid Co., 55 Warren St., New York, N. Y.
Diamond Rubber Co., Inc., Akron, Ohio.
Garlock Packing Co., 50 Main St., Palmyra, N. Y.
B. F. Goodrich Rubber Co., Akron, Ohio
Janos Asbestos Co., 26 Cortlandt St., New York, N. Y.
Jenkins Bros., 80 White St., New York, N. Y.
Geo. W. Knowlton Rubber Co., 60 Pearl St., Boston, Mass.
La Favorite Rubber Mfg. Co., Wagaraw Rd., Hawthorne, N. J.
The Manhattan Rubber Mfg. Co., Passaic, N. J.
Mission Sales Co., 827 First National Bank Bldg., Houston, Texas.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, O.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
New York Belting & Packing Co., 91-93 Chamber St., New York, N. Y.
Petroleum Supply Co., Houston, Texas
Pioneer Rubber Mills, 353 Sacramento St., San Francisco, Calif.
Stewart Machinery Co., Ruder Bldg., Seventh & Market Sts., St. Louis, Mo.
Strong Machinery & Supply Co., 15 Walker St., New York, N. Y.
Voorhees Rubber Mfg. Co., 20 Bostwick Ave., Jersey City, N.J.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.

VALVES, Safety

American Schaeffer & Budenberg Corp., Berry & S. 5th St., Brooklyn, N. Y. See page 153.
American Tank Co., Okla. City, Okla.
Baker Ice Machine Co., 3601 Evans St., Omaha, Nebr.
Briggs Weaver Machinery Co., Dallas, Texas
Brooks Engineering Corp., 314 E. 12th St., Los Angeles, Calif.
Carbondale Machine Co., Carbondale, Pa.
A. W. Cash Co., 3rd & Eldorado Sts., Decatur, Ill.
Continental Supply Co., St. Louis, Missouri
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Eclipse Fuel Engineering Co., Rockford, Ill.
Elliott Company, Jeanette, Pa. See page 101.
Golden-Anderson Valve Specialty Co., 1228 Fulton Bldg., Pittsburgh, Pa.
Hydraulic Press Mfg. Co., Mt. Gilead, Ohio.
Jarecki Mfg. Co., Erie, Pa.
Jenkins Bros., 80 White St., New York, N. Y.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Kelly and Jones Co., Greensburg. Pa. See page 75.
Kunkle Valve Co., 121 No. Clinton St., Ft. Wayne, Ind.
Lunkenheimer Co., Cincinnati, Ohio. See page 17.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, O.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
North American Car Co., 327 S. LaSalle St., Chicago, Ill. See page 156.
LaSalle St., Chicago, Ill.
Oil Conservation Engineering Co Cleveland, Ohio. See page 4.
Oil Well Supply Co., Pittsburgh, Pa.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Petroleum Supply Co., Houston, Texas
Plouff Co., 170 Summer St., Boston, Mass.
Wm. Powell Co., Cincinnati, Ohio
Refrigerating Specialties Co., 714 S. Sacramento Blvd., Chicago, Ill.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Scott Valve Mfg. Co., Detroit, Mich.
John Simmons Co., 104-10 Center St., New York, N. Y.
Star Brass Mfg. Co., 53 Oliver St., Boston, Mass.
Stewart Machinery Co., Ruder Bldg., Seventh & Market Sts., St. Louis, Mo.
Union Iron Works, Selma, Ala.
Walworth Company, 88 Pearl St., Boston, Mass.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

VALVES, Pop Safety

Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
American Schaeffer & Budenberg Corp., Berry & S. 5th Sts., Brooklyn, N. Y. See page 153.
Ashton Valve Co., 161 First St., Cambridge, Boston, Mass.
Briggs Weaver Machinery Co., Dallas, Texas
A. W. Cash Co., 3rd & Eldorado Sts., Decatur, Ill.
Continental Supply Co., St. Louis, Missouri
Detroit Lubricator Co., 5938 Trumbull Ave., Detroit, Mich.
Eclipse Fuel Engineering Co., Rockford, Ill.
Equitable Meter and Mfg. Co., 422-444 First Ave., Pittsburgh, Pa.
Heine Boiler Co., St. Louis, Mo.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Jarecki Mfg. Co., Erie, Pa.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
The Kellogg-Mackay Co., 2020-30 Walnut St., Kansas City, Mo.
Kunkle Valve Co., 121 No. Clinton St., Ft. Wayne, Ind.
F. J. Low Co., Inc., 15 W. 44th St., New York, N. Y.
Lunkenheimer Co., Cincinnati, Ohio See page 17.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
McRea & Roberts Co., 211 Campbell Ave., Detroit, Mich.
Milwaukee Boiler Mfg. Co., 35th St., & National Ave., Milwaukee, Wis.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, O.
National Valve & Mfg. Co., 31st and Liberty, Pittsburgh, Pa.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Oil Well Supply Co., Pittsburgh, Pa.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Petroleum Supply Co., Houston, Texas
Plouff Co., 170 Summer St., Boston, Mass.
Wm. Powell Co., Cincinnati, Ohio
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Scott Valve Mfg. Co., Detroit, Mich.
John Simmons Co., 104-10 Center St., New York, N. Y.
The Stanwood Corp., Cincinnati, O.
Star Brass Mfg. Co., 53 Oliver St., Boston, Mass.
Stewart Machinery Co., Ruder Bldg., Seventh & Market Sts., St. Louis, Mo.
Union Iron Works, Selma, Ala.
Walworth Company, 88 Pearl St., Boston, Mass.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

VALVES, Sight Feed

Briggs Weaver Machinery Co., Dallas, Texas
Greene Brothers, Wichita Falls, Texas. See page 61.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
Lunkenheimer Co., Cincinnati, Ohio. See page 17.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Wm. W. Nugent & Co., 410-412 No. Hermitage Ave., Chicago, Ill.

Peden Iron & Steel Co., Houston, Texas. See page 85.
Petroleum Supply Co., Houston, Texas
Plouff Co., 170 Summer St., Boston, Mass.
Wm. Powell Co., Cincinnati, Ohio
John Simmons Co., 104-10 Center St., New York, N. Y.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Walworth Company, 88 Pearl St., Boston, Mass.
D. T. Williams Valve Co., Spring Grove Ave. & Township St., Cincinnati, Ohio. See page 35.

VALVES, Solenoid Operated
Atlas Valve Co., 282 South St., Newark, N. J.
The Bristol Co., Waterbury, Conn. See page 154.
Brown Instrument Co., 4537 Wayne Ave., Philadelphia, Pa.
Eclipse Fuel Engineering Co., Rockford, Ill.
Fort Worth Laboratories, 828½ Monroe St., Fort Worth, Texas. See page 158.
Golden-Anderson Valve Specialty Co., 1228 Fulton Bldg., Pittsburgh, Pa.
Jenkins Bros., 80 White St., New York, N. Y.
The Kennedy Valve Mfg. Co., Elmira, N. Y.
Maintenance Eng. Corp., 1802 Conti St., Houston, Texas. See page 150.
Mason Regulator Co., Milton, Mass.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Plouff Co., 170 Summer St., Boston, Mass.
Refrigerating Specialties Co., 714 S. Sacramento Blvd., Chicago, Ill.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.
Schutte & Koerting Co., 1165 Thompson St., Philadelphia, Pa See page 149.
Stewart Machinery Co.,Buder Bldg., Seventh & Market Sts., St. Louis, Mo.

VALVES, Super-Heated Steam, Steel
Geo. B. Allan & Co., 510 Deere Bldg., Dallas, Texas. See page 150.
Ashton Valve Co., 161 First St., Cambridge, Boston, Mass.
Barco Mfg. Co., 1801 Winnemac Ave., Chicago, Ill.
A. W. Cash Co., 3rd & Eldorado Sts., Decatur, Ill.
Chapman Valve Mfg. Co., Indian Orchard, Mass.
Cyclops Steel Co., Titusville, Pa.
The Edward Valve & Mfg. Co., East Chicago, Ind.
Julian d'Este Co., 26 Canal St., Boston, Mass.
Golden-Anderson Valve Specialty Co., 1228 Fulton Bldg., Pittsburgh, Pa.
Greene Brothers, Wichita Falls, Texas. See page 61.
Hart Co., Inc., Williamsport, Pa.
Homestead Valve Mfg. Co., Inc., Homestead, Pa.
Hughes Tool Co., 300 Hughes St., Houston, Texas. See insert.
Hydraulic Press Mfg. Co., Mt. Gilead, Ohio.
Jenkins Bros., 80 White St., New York, N. Y.
Kelly and Jones Co., Greensburg, Pa. See page 75.
The Kennedy Valve Mfg. Co., Elmira, N. Y.
Lunkenheimer Co., Cincinnati, Ohio. See page 17.
Maintenace Eng. Corp., 1802 Conti St., Houston, Texas. See page 150.
Mason Regulator Co., Milton, Mass.
Nason Manufacturing Company, 71 Fulton St., New York. N. Y.
National Supply Co., Toledo, O.
National Valve & Mfg. Co., 31st and Liberty, Pittsburgh, Pa.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Plouff Co., 170 Summer St., Boston, Mass.
Wm. Powell Co., Cincinnati, Ohio
Reading Steel Castings Co., Reading, Pa.
John Simmons Co., 104-10 Center St., New York, N. Y.
Schutte & Koerting Co., 1165 Thompson St., Philadelphia, Pa. See page 149.
Stewart Machinery Co., Buder Bldg., Seventh & Market Sts., St. Louis, Mo.
Henry Vogt Machine Co., Louisville, Ky. See page 5.

VALVES, Tank Car Safety
General American Tank Car Corp., 940 Illinois Merc. Bank Bldg., Chicago, Ill. See page 145.

VALVES—Three-Way
H. Belfield Co., 435 N. Broad St., Philadelphia, Pa.
Golden-Anderson Valve Specialty Co., 1228 Fulton Bldg., Pittsburgh, Pa.
W. H. Nicholson & Co., 12 Oregon St., Wilkes-Barre, Pa.

VALVES, Vent
Brooks Engineering Corp., 314 E. 12th St., Los Angeles, Calif.

VALVES, Wax Press Opening
Carbondale Machine Co., Carbondale, Pa.
Greene Brothers, Wichita Falls, Texas. See page 61.
Homestead Valve Mfg. Co., Inc., Homestead, Pa.
Hydraulic Press Mfg. Co., Mt. Gilead, Ohio.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Plouff Co., 170 Summer St., Boston, Mass.
Henry Vogt Machine Co., Louisville, Ky. See page 5.

VAPORIZERS
E. B. Badger & Sons Co., 62-75 Pitts St., Boston, Mass.
J. P. Devine Co., 1380 Clinton, Buffalo, N. Y.
Arthur G. McKee & Co., 2422 Euclid Ave., Cleveland, Ohio
Petroleum Iron Works, Sharon, Pa.
Philadelphia Coppersmithing Co., 222 N. Front St., Philadelphia Pa.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.
The Widdell Engineering Co., 512 American Bk. Bldg., Kansas City, Mo.

VAPOR RECOVER SYSTEMS
C. F. Braun & Co., Alhambra, Cal. See pages 78-79.
Brooks Engineering Corp., 314 E. 12th St., Los Angeles, Calif.
J. P. Devine Co., 1380 Clinton, Buffalo, N. Y.
Griscom-Russell Co., 285 Madison Ave., New York, N. Y. See page 133.
Philadelphia Coppersmithing Co., 222 N. Front St., Philadelphia, Pa.

VARNISH, Tank Repair
Federal Process Co., Cleveland, Ohio.

VENTILATING Systems
Shevlin Engineering Co., Inc., 259 W. 34th St., New York, N. Y.

VENTILATORS
The American Blower Co., 6004 Russell, Detroit, Mich.
Burt Mfg. Co., Akron, Ohio.
Fort Worth Steel & Machinery Co., Fort Worth, Texas
Walter B. Gilbert & Co., Sixth Ave., & Yale St., York, Pa.
Kernchen Co., 111 W. Washington St., Chicago, Ill.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Nitingale & Childs Co., 195 Albany St., Cambridge Sta., Boston, Mass.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Robinson Ventilating Co., 517 House Bldg., Pittsburgh, Pa.
Schutte & Koerting Co., 1165 Thompson St., Philadelphia, Pa. See page 149.
The Swartwout Co., 18525 Euclid Ave., Cleveland, Ohio.
Union Iron Works, Selma, Ala.
E. Van Noorden Co., 100 Magazine St., Roxbury, Mass.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

VENTILATORS, Roof
The American Cornice Wks. Co., 237-41 N. Water St., Wichita, Kansas
Burt Mfg. Co., Akron, Ohio.
Buder Mfg. Co., 1124 Grand Ave., Kansas City, Mo.
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Fort Worth Steel & Machinery Co., Fort Worth, Texas
Walter B. Gilbert & Co., Sixth Ave., & Yale St., York, Pa.
The Kellogg-Mackay Co., 2000-30 Walnut St., Kansas City, Mo.
Kernchen Co., 111 W. Washington St., Chicago, Ill.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Nitingale & Childs Co., 195 Albany St., Cambridge Sta., Boston, Mass.
H. A. Paine Co., 419-20 Cotton Exchange Bldg., Houston, Texas
Peden Iron & Steel Co., Houston, Texas. See page 85.
The Swartwout Co., 18525 Euclid Ave., Cleveland, Ohio.
E. Van Noorden Co., 100 Magazine St., Roxbury, Mass.
Walworth Company, 88 Pearl St., Boston, Mass.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.

VENTILATORS, Steam-Jet
Schutte & Koerting Co., 1165 Thompson St., Philadelphia, Pa. See page 149.

VENTILATORS, Window
The American Blower Co., 6004 Russell, Detroit, Mich.
Walter B. Gilbert & Co., Sixth Ave., & Yale St., York, Pa.
Kernchen Co., 111 W. Washington St., Chicago, Ill.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Peden Iron & Steel Co., Houston, Texas. See page 85.
E. Van Noorden Co., 100 Magazine St. Roxbury, Mass.

VISCOSIMETERS
Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Fort Worth Laboratories, 828½ Monroe St., Ft. Worth, Texas. See page 158.
Greene Brothers, Wichita Falls, Texas. See page 61.
The Emil Greiner Co., 55 Fulton St., New York City
Griebel Instrument Co., Carbondale, Pa.
Oil Well Supply Co., Pittsburgh, Pa.
Refinery Supply Co., Tulsa, Okla. See page 44.
Taylor Instrument Co., Rochester, N. Y. See page 160.
Arthur H. Thomas Co., W. Washington Square, Philadelphia, Pa.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.

VISES
Briggs Weaver Machinery Co., Dallas, Texas
Canedy-Otto Mfg. Co., Chicago Heights, Ill.
Continental Supply Co., St. Louis, Missouri
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Goodell-Pratt Co., 57 Wells St., Greenfield, Mass.
Greenfield Tap & Die Corp'n., Greenfield, Mass.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, O.
Oil Well Supply Co., Pittsburgh, Pa.
Oster Mfg. Co., 2057 E. Sixty-First Place, Cleveland, Ohio
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Petroleum Supply Co., Houston, Texas
Joseph T. Ryerson & Sons, 2558 W. 16th St., Chicago, Ill.
Shepleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
John Simmons Co., 104-10 Center St., New York, N. Y.
Spencer Regulator Co., Cor. Derby & Liberty Sts., Salem, Mass.
The L. S. Starrett Co., Athol, Mass.
Toledo Pipe Threading Machine Co., 1445 Summit St., Toledo, O.
Trimont Mfg. Co., 55 Amory St., Roxbury, Boston, Mass.
Walworth Company, 88 Pearl St., Boston, Mass.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

VOLTOMETERS
The Bristol Co., Waterbury, Conn. See page 154.
Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
The Esterline-Angus Co., P. O. Box 596, Indianapolis, Ind.
Illinois Testing Laboratories, Inc., 141-143 W. Austin Ave., Chicago, Ill.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

W

WALLS, Furnace
Burke Engineering Co., Holland, Mich.
M. H. Detrick Co., 140 So. Dearborn St., Chicago, Ill.
Eureka Fire Brick Works, 1507 First Nat. Bank Bldg., Pittsburgh, Pa.
A. P. Green Fire Brick Co., Mexico, Mo.
T. K. Harris, Polytechnic Station, Fort Worth, Texas.
McLeod & Henry Co., Troy, N. Y.
S. Obermayer Co., 2563 W. 18th St. Chicago. Ill.
H. A. Paine Co., 419-20 Cotton Exchange Bldg., Houston, Texas
Quigley Furnace Specialties Co., 25 Church St., New York, N. Y.
Quinn & Co., 1347 Harrison Ave., Cincinnati, Ohio
Standard Fuel Engr'g Co., 667-687 Post Ave., So. Detroit, Mich.
Steam Boiler Equipment Co., 1750 Monadnock Block, Chicago, Ill.

WALLS, Water
Heine Boiler Co., St. Louis, Mo.

WASHERS
U. S. Indestructible Gasket Co., 829 E. 15th St., Brooklyn, N. Y.

WASHERS, Air
The American Blower Co., 6004 Russell, Detroit, Mich.
E. B. Badger & Sons Co., 62-75 Pitts St., Boston, Mass.
The J. A. Rossiter Co., Union National Bank Bldg., Houston, Tex.

WASHERS, Boiler
Rue Mfg. Co., 228 Cherry St. Philadelphia, Pa.

WASHERS, Felt
Booth Felt Co., Inc., 463-473 Nineteenth St., Brooklyn, N. Y.

WASHERS—Leather
The Chicago Rawhide Mfg. Co., 1273 Elston Ave. Chicago, Ill.
Judd & Leland Mfg. Co., Clifton Springs, N. Y.

WASHERS, Rubber
La Favorite Rubber Mfg. Co., Wagaraw Rd., Hawthorne, N. J.

WASTE Cotton Wiping
Houston Waste & Fibre Mills, Houston, Texas.

WASTE, Wool Packing
Houston Waste & Fibre Mills, Houston, Texas.

WATCHES, Stop
Central Scientific Co., 460 E. Ohio St., Chicago, Ill.
Curtin Mill Supply Co., 17 N. Louisiana St., Houston, Texas. See page 160.
Eugene Dietzgen Co., 162-166 W. Monroe St., Chicago, Ill.
Fort Worth Laboratories, 828½ Monroe St., Ft. Worth, Texas. See page 158.
Greene Brothers, Wichita Falls, Texas. See page 61.

Peden Iron & Steel Co., Houston, Texas. See page 85.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

WATERPROOFING, Compound
American Paint & Supply Co., Dallas, Texas
R. V. Aycock Co., Kansas City, Mo.
Baker Ice Machine Co., 3601 Evans St., Omaha, Nebr.
Celite Products Co., 1320 South Hope St., Los Angeles, Calif. See front cover.
Cook Paint & Varnish Co., North Kansas City, Mo. See page 7.
Johns-Manville Inc., 292 Madison Ave., New York, N. Y.
Paraffine Cos. Inc., San Francisco, Calif.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Pe olin Co. of America, 1112 W 37th St., Chicago, Illinois
Philip Carey Co., Cincinnati, Ohio
The Sherwin-Williams Co., 601 Canal Road, Cleveland, Ohio.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

WATER STILLS, Industrial and Laboratory
Jewell Polar Co., 9 S. Clinton St., Chicago, Ill.

WATER SYSTEMS, Cold Drinking
Audiffren Refrigerating Machine Co., 285 Madison Ave., New York, N. Y.
Jewell Polar Co., 9 S. Clinton St., Chicago, Ill.

WELDING, Equipment
Air Reduction Sales Co., 342 Madison Ave., New York, N. Y.
The Alexander Milburn Co., 1416 W. Baltimore St., Baltimore, Md.
Brazelton, Wessendorff & Nelms, Houston, Texas
Briggs Weaver Machinery Co., Dallas, Texas
Burdett Mfg. Co., 309 St. Johns Court, Chicago, Ill.
Columbian Steel Tank Co., 1401-1631 W. Twelfth St., Kansas City, Mo.
The Wm. Cramp & Sons Ship & Engine Bldg. Co., Richmond & Norris Sts., Philadelphia, Pa.
Diamond Rubber Co., Inc., Akron Ohio.
F. W. Gartner Co., Houston, Texas.
General Electric Co., Schenectady, New York
Gibb Welding Machines Co., Bay City, Mich.
Henderson-Willis Welding & Cutting Co., 2305-09 N. Eleventh St., St. Louis, Mo.
MacLeod Company, Cincinnati, Ohio
Modern Engineering Co., 3411-13 Pine Blvd., St. Louis, Mo. See page 141.
National Oxygen Co., 5811 W. 66th St., Chicago, Ill.
Oxweld Acetylene Co., Long Island City, L. I., N. Y.
Page Steel & Wire Co., 208 S. La-Salle, Chicago, Ill.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Plouff Co., 170 Summer St., Boston, Mass.
Richmond Engineering Co. 935, Brook Ave., Box 514, Richmond, Va.
Joseph T. Ryerson & Sons, 2558 W. 16th St., Chicago, Ill.
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
Smiths Inventions, Inc., 2636 Fourth St., S.E., Minneapolis, Minn.
Torchweld Equipment Co., 224 No. Carpenter St., Chicago, Ill.
Winfield Electric Welding Machine Co., 12 Atlantic St., Warren, O.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

WELDING & CUTTING Equipment, Oxy-Acetylene
Modern Engineering Co., 3411-13 Pine Blvd., St. Louis, Mo. See page 141.

WHEELS, Fly
Brass Foundry & Machine Co., Fort Wayne, Ind.
A. & F. Brown Co., 79 Barclay St., New York, N. Y.
Continental Supply Co., St. Louis, Missouri
Falls Clutch & Machinery Co., Cuyahoga Falls, Ohio.
The Hill Clutch Machine & Foundry Co., Cleveland, Ohio
Independent Foundry Co., 73 York St., Portland, Ore.
National Supply Co., Toledo, O.
Peden Iron & Steel Co., Houston Texas. See page 85.
M. H. Treadwell Co. of Ill., 208 S. La Salle St., Chicago, Ill.

WHEELS, Sprocket
Briggs Weaver Machinery Co., Dallas, Texas
Continental Supply Co., St. Louis, Missouri
Diamond Chain & Mfg. Co., 50 Kentucky Ave., Indianapolis, Ind.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
National Supply Co., Toledo, O.
Oil Well Supply Co., Pittsburgh Pa.
Peden Iron & Steel Co., Houston Texas. See page 85.
Union Iron Works, Selma, Ala.
Weller Mfg. Co., 1820 N. Kostner Ave., Chicago, Ill.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.

WHISTLES, Siren
A. & F. Brown Co., 79 Barclay St. New York, N. Y.

WHISTLES, Steam
American, Schaeffer & Budenberg Corp., Berry & S. 5th St., Brooklyn, N. Y. See page 153.
Brass Foundry & Machine Co. Fort Wayne, Ind.
Briggs Weaver Machinery Co., Dallas, Texas
Continental Supply Co., St. Louis, Missouri
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
F. J. Low Co., Inc., 15 W. 44th St., New York, N. Y.
Lunkenheimer Co., Cincinnati, O. See page 17.
Manning, Maxwell & Moore, Inc. 100 E. 42nd St., New York City
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, O.
Oil Well Supply Co., Pittsburgh Pa.
Peden Iron & Steel Co., Houston Texas. See page 85.
Pitts & Kitts Mfg. & Supply Co., 91 7th Ave., New York, N. Y.
Plouff Co., 170 Summer St., Boston, Mass.
Wm. Powell Co., Cincinnati, Ohio
Roberts Steam Specialty Co., 5318 St. Clair Ave., Cleveland, Ohio
Star Brass Mfg. Co., 53 Oliver St., Boston, Mass.
Union Iron Works, Selma, Ala.
Union Water Meter Co., Worcester, Mass.
Walsh & Weidner Boiler Co., Chattanooga, Tenn.
Walworth Company, 88 Pearl St. Boston, Mass.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

WINCHES, Pneumatic
Briggs Weaver Machinery Co., Dallas, Texas
Chicago Pneumatic Tool Co., 6 E. 44th St., New York, N. Y.
R. B. Everett Co., Houston, Texas.
Hoist & Crane Eng. Co., New York, N. Y.

WINCHES, Safety Tank
Brooks Engineering Corp., 314 E 12th St., Los Angeles, Calif.
Kansas City Structural Steel Co., Kansas City, Kansas.
Neilan Abbey & Co., 641-643 Santa Fe Ave., Los Angeles, Calif.
Oil Conservation Engineering Co., Cleveland, Ohio. See page 4.
United Iron Works Co., Ridge Arcade Bldg., Kansas City, Mo. See page 161.

WINDOWS, Metal
E. Van Noorden Co., 100 Magazine St., Roxbury, Mass.

WIRE
American Brass Co., Waterbury. Conn.

WIRE, Line
Briggs Weaver Machinery Co., Dallas, Texas
Continental Supply Co., St. Louis, Missouri
Kansas City Structural Steel Co., Kansas City, Kansas.
National Supply Co., Toledo, O.
Oil Well Supply Co., Pittsburgh Pa.
Page Steel & Wire Co., 208 S. La Salle, Chicago, Ill.
Peden Iron & Steel Co., Houston Texas. See page 85.
Petroleum Supply Co., Houston, Texas
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153.

WIRE TIGHTENERS
Mission Sales Co., 827 First Nat Bank Bldg., Houston, Texas.
National Supply Co., Toledo, O

WIRE, Valve Spring
Briggs Weaver Machinery Co., Dallas, Texas
Geo. W. Knowlton Rubber Co., 60 Pearl St., Boston, Mass.
Southern Brass Mfg. Co., Houston Texas.

WIRING SUPPLIES, Electric
American Brass Co., Waterbury Conn.
Ellsworth Haning, 114-18 Liberty St., New York, N. Y.
Houston Armature Works, Houston, Texas
Langstadt-Meyer Co., Appleton, Wis.
Peden Iron & Steel Co., Houston Texas. See page 85.
The Pyle-National Co., Chicago, Ill.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
Woodward, Wight & Co., Ltd. New Orleans, La. See page 153

WRENCHES
Brazelton, Wessendorff & Nelms Houston, Texas
Briggs Weaver Machinery Co., Dallas, Texas
Continental Supply Co., St. Louis, Missouri
Greenfield Tap & Die Corp'n. Greenfield, Mass.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
National Supply Co., Toledo, O.
Oil Well Supply Co., Pittsburgh, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Petroleum Supply Co., Houston, Texas.
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
John Simmons Co., 104-10 Center St., New York, N. Y.
Union Iron Works, Selma, Ala.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

WRENCHES, Monkey
Larco Wrench & Mfg. Corp., 7800 Woodlawn Ave., Chicago, Ill.
Trimont Mfg. Co., 55 Amory St., Roxbury, Boston, Mass.

WRENCHES, Pipe
Brazelton, Wessendorff & Nelms, Houston, Texas
Briggs Weaver Machinery Co., Dallas, Texas
Continental Supply Co., St. Louis, Missouri
Greenfield Tap & Die Corp'n., Greenfield, Mass.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Larco Wrench & Mfg. Corp., 7800 Woodlawn Ave., Chicago, Ill.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
Nason Manufacturing Company, 71 Fulton St., New York, N. Y.
National Supply Co., Toledo, O.
Oil Well Supply Co., Pittsburgh, Pa.
Henry B. Pancoast & Co., 940-962 N. Front St., Philadelphia, Pa.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Petroleum Supply Co., Houston, Texas
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
John Simmons Co., 104-10 Center St., New York, N. Y.
Union Iron Works, Selma, Ala.
Walworth Company, 88 Pearl St., Boston, Mass.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.
The Youngstown Sheet & Tube Co., Youngstown, Ohio

WRENCHES, Chain Pipe
Trimont Mfg. Co., 55 Amory St., Roxbury, Boston, Mass.

WRENCHES, Tap
Brazelton, Wessendorff & Nelms, Houston, Texas
Briggs Weaver Machinery Co., Dallas, Texas
Continental Supply Co., St. Louis, Missouri
Greenfield Tap & Die Corp'n., Greenfield, Mass.
Horton Machine Works, 4th and Magee Sts., Elmira, N. Y.
F. W. Jesup & Co., 90-92 West Broadway, New York, N. Y.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
National Supply Co., Toledo, O.
Peden Iron & Steel Co., Houston, Texas. See page 85.
Petroleum Supply Co., Houston, Texas
Shapleigh Hardware Co., 315 Washington Ave., St. Louis, Mo.
John Simmons Co., 104-10 Center St., New York, N. Y.
Union Iron Works, Selma, Ala.
Walworth Company, 88 Pearl St., Boston, Mass.
Woodward, Wight & Co., Ltd., New Orleans, La. See page 153.

Skelly Building

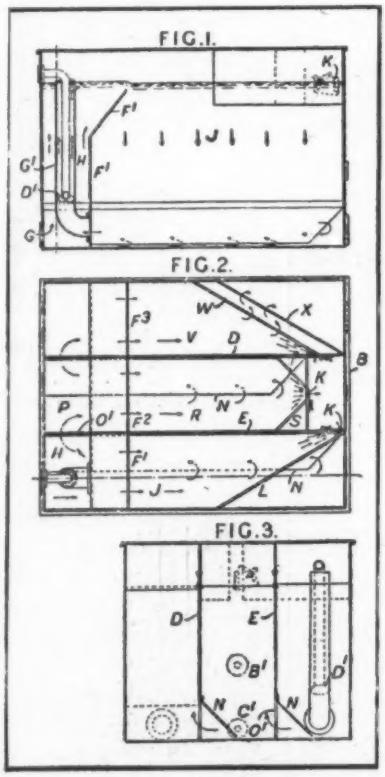
Cisco, Texas.—The Skelly Oil Company is moving in materials to erect a one-million cubic foot daily capacity absorption plant near the Gwinnupp oil and gas discovery well in Coleman County, Texas. Equipment salvaged from a dismantled plant near Covington, Okla., is being used by Skelly in the erection of the Texas plant, which was started before offsets to the discovery well were drilled in. The plant is to be located on an 80-acre site on the J. C. Dibrell land, J. W. Hicks survey, and the gas from the discovery well tests about one gallon of gasoline per thousand cubic feet. An eight-mile pipe line will be constructed to load the gasoline in tank cars at Coleman, Texas.

Increasing Capacity

San Angelo, Texas.—The operating capacity of the Big Lake Oil Company's natural gasoline plant in the Big Lake field, West Texas, is to be increased to approximately 14,000 gallons of gasoline daily by the addition of two absorption units. This plant is now manufacturing 7500 gallons of gasoline daily.

EXTRACTS OF REFINING TECHNOLOGY

Distilling Oil Shale—The oil shale is heated in a rotary retort which comprises two chambers, a preheating chamber in which it is raised to a temperature at which the volatile matter is about to be driven off, and a second chamber in which it is subjected, in thinner layers, to a higher temperature. Means are provided, for example, a bath of molten metal, for applying the heat evenly to the second chamber. The volatile matter is released quickly, and is withdrawn by means of a suction pump. No steam is introduced into the retort, but hydrogenation of the unsaturated volatiles that are produced by cracking is brought about by the hydrogen, which is liberated by the decomposition of the moisture that is originally present in the material.



This reaction is catalyzed by causing the vapors to pass through a cascade of hot spent shale which is located in the second chamber. The vapors are condensed in stages, the first condenser removing the heavy paraffin wax fraction, the second the lubricating oil fraction, and the third the gasoline fraction. The first condenser is maintained at a temperature at which some of the heavy condensates are cracked, and the second at a temperature at which some of the remaining condensates are cracked, the temperatures being maintained by means of hot flue gases from suitable heated zones of the combustion chamber. British Patent No. 244,275.

* * *

Separating Oil and Water—The constituents of a mixture, such as oil and water, are separated during passage through a tank divided into compartments so that liquid flowing upwards in one compartment passes over a weir into the next in which the flow is downwards and the lighter liquid separates on the surface.

The tank B is divided lengthwise by partitions D, E, and laterally by weirs F^1, F^2 and F^3. The mixture enters the compartment H through an inlet G at the bottom and flows over the weir F^1 into the compartment J. Oil separates on the surface and is directed by a guide plate L to an outlet K, the area and depth of which can be regulated, the rest of the liquid flowing into a channel formed at the bottom by a plate N, which directs it through an orifice O^1 into the next upward-flow compartment P. The later downward-flow compartments R, V are provided with outlets K to which the lighter liquid is finally discharged over a weir X. The sump into which the lighter liquid enters through the outlets K is provided with outlets B^1 C^1 at different levels so that a further separation can take place there. Steam admitted through a nozzle D^1 and rising in a pipe G^1 draws liquid from the compartment J and causes it to pass again over the weir F^1. Liquid may be withdrawn in this manner from any of the downward-flow compartments and recirculated over one or more of the weirs.

British Patent Application No. 4598 of 1924.

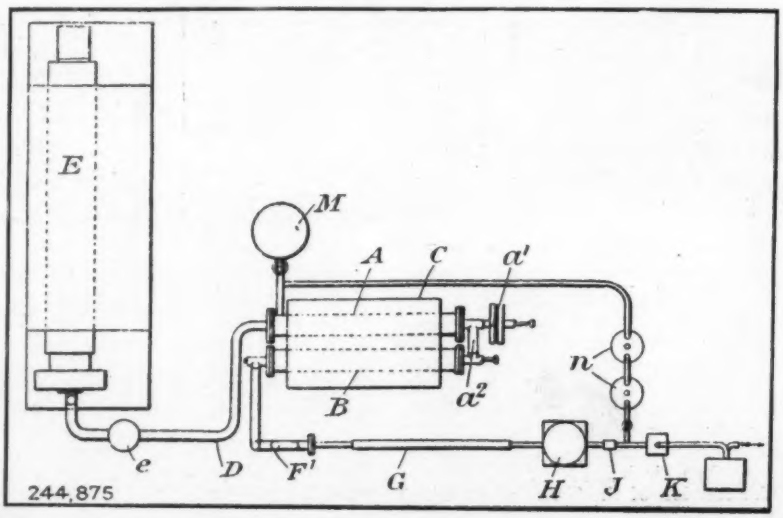
Desulphurization of Mineral Oils—According to Quim. e. ind., 1925, volume 2, page 92, concentrated nitric acid has been found to give good results in the desulphurization of petroleum oils. The organic sulphur compounds are oxidized to sulphur dioxide and the asphalts and higher aromatic substances are precipitated, the latter as nitro-bodies. Subsequent treatment with alkali and magnesium neutralizes the excess of sulphur dioxide, reduces the nitro-compounds and dissolves the resin.

* * *

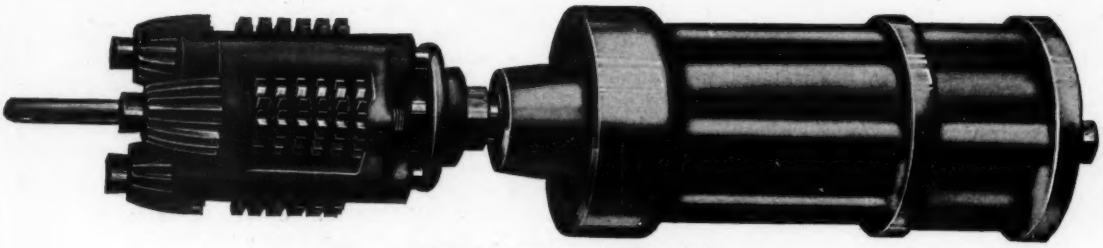
Distilling and Cracking Hydrocarbons—Oil is heated for distillation, dehydration or cracking purposes by radiant heat which is directed by parabolic mirrors on a spray of oil. The oil is pumped up a central tube in a tower and falls in a spray from a distributing device. The heating elements consist of electrical elements or tubes containing heated fluids placed in the foci of vertical slots of parabolic cross-section disposed in the inner wall of the tower. A constant level of oil is maintained in a reservoir at the base of the tower, from which oil is pumped up the central tube. Unvaporized oil returns to the reservoir through a filter, which removes the carbon. Vapors are formed in the column and pass through trays which contain purifying agents, such as bauxite and copper oxide. Several columns may be fixed to one reservoir. The temperature of various portions of the apparatus are controlled by pyrometers. British Patent No. 224,497.

* * *

Refining Hydrocarbons — Mineral oils, low temperature tars and the like are gradually heated with alkali metals in the presence of neutral organic solvents containing oxygen, such as alcohols, aldehydes, ketones. The temperature obtained in the process is 230 degrees C. The solvents are distilled off, air being blown through the mass when cooled, and the deposited matter being



ROTO TUBE CLEANERS



Roto Air-Driven Heavy Duty Cleaner

For

CRACKING STILLS

The Roto Company

HARTFORD, CONN.

We can supply your immediate requirements for Class IV Insulated Tank Cars. Write or wire us now for lease quotations on Conley Cars that give efficient S-E-R-V-I-C-E.

CONLEY TANK CAR COMPANY

OLIVER BUILDING
PITTSBURGH, Pa.

MAGNOLIA BUILDING
DALLAS, TEXAS

separated from the oil by decantation or filtration. German Patent No. 401,-353.

* * *

Conversion of Mineral Oils Into Colloidal Products—The formation of a slime in transformer oils is particularly the result of reaction of the oil substance with water and oxygen. The products that are obtained in this fashion consist mainly of acid substances and partially of asphalts. These are of colloidal character. These impurities can be removed for the most part by treatment with eight per cent fuller's earth at 60 degrees C. On the other hand it has been found that silica gel has little or no purifying action in this connection. Zeitschrift fuer angewandte Chemie, 1925, 659-662.

* * *

Cracking and Separating Mineral Oils—The oil to be cracked is vaporized and subjected to preliminary cracking treatment in a retort in which carbon is deposited. The vapor passes into a second retort which contains a catalyst, where further cracking takes place and carbon is not deposited. In the plant which is shown in the illustration, coal or shale is subjected to low temperature distillation in a retort at a temperature of 400 to 600 degrees C., after being dried and preheated to a temperature of 200 to 250 degrees C.

The vapor passes through a dust trap e and pipe D to the retort A, which is provided with an agitator driven by a pulley a^1. The vapor passes through pipe a^2 to the second cracking retort B, which is arranged in the same furnace chamber C, and contains catalysts, such as are described in British Patent No. 209,355. The cracked vapor passes to an atmospheric condenser F where heavy oils are condensed, and then through water-cooled condensers G, H. The vapor then passes to a pump J and oil scrubber K, and thence to a gas holder. Oil from another source M may be similarly treated in the same set of retorts, with or without the gas from the retort E. Some of the permanent gas can be returned through an ammonia saturator n. The retorts A and B are maintained at a temperature of approximately 500 degrees C and the condenser F at a temperature of approximately 150 degrees C. The condenser G is maintained at about 200 degrees C. British Patent No. 244,875.

* * *

Determination of Benzene in Gasoline—In determining the percentage of benzine in gasoline, a solvent was employed by heating a mixture of 100 cubic centimeters of acetic anhydride, free from any homologues, with sulphuric acid (eight per cent of concentrated acid being employed for this purpose), to a temperature of 85 degrees C, until a sample no longer gave a precipitate nor a turbid solution when admixed with chloride of barium. Ten cubic centimeters of the gasoline were taken as a sample and tested with eleven cubic centimeters of the solvent, the loss in volume of the solvent being equivalent to the volume of benzine contained in the gasoline.

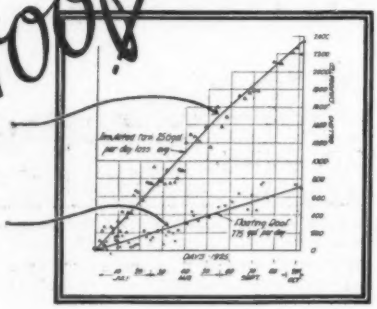
This particular solvent cannot be used, if the gasoline contains more than approximately 50 per cent benzene. The hydrocarbons, tetralin and other hydrogenated compounds, are also absorbed by the solvent, but in this case exact results are obtained only when the content of these hydrocarbons in the gasoline is no more than 10 per cent. Chemiker Zeitung, 49, page 57.

* * *

Purification of Oil—In French Patent No. 577,969 there is described a process for the purification of petroleum oil. This process consists in making the vapors of the crude oil or of the petroleum distillates, such as gasoline, react with hydrogen which has been admixed with chlorine or bromine, the catalyst in the process being of neutral character, such as floridin, bauxite, alumina or animal black.

The reaction takes place at a temperature of 180 to 190 degrees C. In this process purified gasolines are obtained which are free from odor and from color and do not hence require the ordinary purification treatment with acid and soda. The non-saturated hydrocarbons are thus converted into "more saturated" hydrocarbons. The amount of chlorine that is used for

Proof! that the Wiggins Roof cuts evaporation to the minimum.



25.6 gallons lost per day by a tank heavily insulated with hollow tile.

7.75 gallons lost per day by a tank equipped with Wiggins Roof.

ONE of the big oil companies found, by the 92 day test charted above, that the Wiggins Roof saved 17.85 gallons evaporation loss per day over an insulated gastight tank.

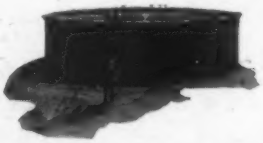
An insulated gastight tank is the best evaporation reduction device outside the floating roof with a gastight seal. It is better than a floating roof with an air leaky seal between the pan and the tank shell.

The particular tank which lost 25.6 gallons per day was insulated in the best possible manner. The shell had ten inches of insulation; six of hollow tile and a four inch dead air space. The roof was covered with light insluating brick three and one quarter inches thick.

The test was made on standing storage, where gastight tank losses are smallest. Both the insulation and the standing storage features greatly favored the gastight tank, yet an uninsulated tank equipped with a standard Wiggins Roof allowed less than one-third as much evaporation.

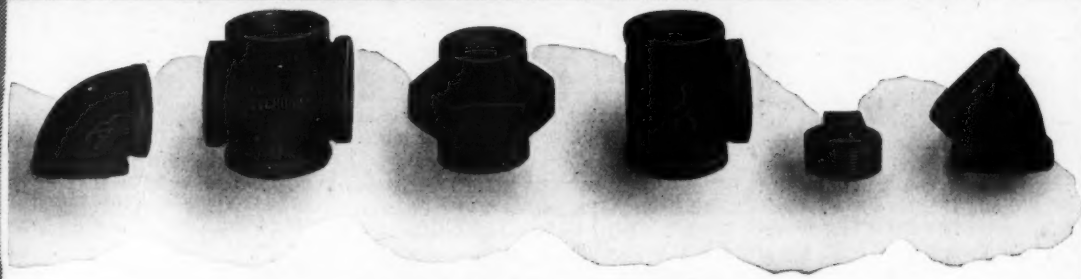
Equip your tanks with Wiggins Roofs; especially rundown tanks, working tanks and those used for gasoline storage. And do not install new tanks until you have our price on them equipped with Wiggins Roofs. Get in touch with our nearest office.

Chicago Bridge & Iron Works
Chicago: 2463 Old Colony Bldg.
New York: 3102 Hudson Terminal Bldg.
Cleveland: 2234 Union Trust Bldg.
Dallas: 1655 Praetorian Bldg.
San Francisco: 1051 Rialto Bldg.



The WIGGINS ROOF

Keeps fire out • • • Keeps oil in



CORROSION PROOF!

Sulphuric acid, caustic soda and other materials are readily handled with

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Send for Bulletin 7-E describing the S-K Valves, Fittings and Jets made of Everdur.

SCHUTTE & KOERTING CO., 1253 N. 12th St., PHILADELPHIA, PA.

Standard type EMPIRE Oil Meter, fitted with adjustable vertical dial

Positive Displacement **Oscillating Piston**

OIL METERS

For Petroleum and All Its Liquid Products

Entirely different from every other type of oil meter

The EMPIRE

In successful use for over forty years. Never equaled for **lasting** accuracy and ease and cheapness of maintenance.

Sizes 5/8″ to 6″. Standard and high pressure types.

Send for our EMPIRE Information Sheet and let us make recommendation for your special service. This is quite without obligation.

Special high pressure EMPIRE Oil Meter, with horizontal straight reading register

National Meter Co.

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San Francisco Los Angeles

this purpose averages about one per cent by volume.

* * *

Cracking Oil Under Pressure—The improvement in the oil cracking process, which is the subject of French Patent No. 577,486, calls for an apparatus which is used for cracking oil under pressure. This apparatus consists essentially of a preheater, a number of tubes arranged vertically for heating the oil, the length of these tubes being relatively short and of various small diameter. The liquid emerging from the preheater is passed through these tubes. Then there is a tank for receiving the oil after the reaction has taken place.

A masonry construction surrounds all these parts of the cracking apparatus and this masonry construction contains a combustion chamber and an arrangement for the travel of the hot gases around the various parts of the apparatus. The apparatus is also provided with the suitable pyrometers for making sure that the temperature does not rise too high in the cracking tubes.

Purchase Made

Chicago, Illinois. — The Chicago Pneumatic Tool Company has bought the George Oldham & Sons Company of Baltimore, Md. Oldham products in the future will be manufactured at the Detroit plant. Sales will be combined with those of the Chicago Pneumatic Tool Company.

Building Carbon Plant

Breckenridge, Texas.—The construction of a carbon black plant to burn residue gas from Humble Oil and Refining Company's natural gasoline plant on the A. J. Dunlap farm, section 1411, T. E. & L. Company survey, Stephens County, has been started by Godfrey L. Cabot, Inc., of Boston, Mass. This plant will be the sixth for Stephens County, and will burn approximately 6,000,000 cubic feet of gas daily. It is located on the same farm as the natural gasoline plant. The state permit covering this carbon black plant was signed to the Boston Interests.

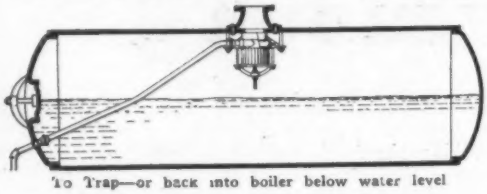
Humble Building

Cisco, Texas.—Humble Oil and Refining Company is constructing an absorption gasoline plant in the new high gravity oil and gas field being developed from shallow pay in the northern part of Brown County to handle 3,000,000 cubic feet of gas daily. The plant is located on the Kilgore farm, lot 2, Delgado survey, and construction work was started in advance of the active development of the field. The gas in this field now offers a gasoline yield of two gallons per thousand, while the crude tests 43 gravity.

Office Moved

The Chicago offices of the Foxboro Company have been moved to rooms 204 and 206 St. Clair building. C. H. Roessner is in charge of the office.

CENTRIFIX SEPARATOR



Centrifix Desaturator will remove all moisture and dirt before steam leaves boiler and deliver clean bone-dry steam to prime movers, etc.

Centrifix is used for the separation and purification of all moving steam, air, gas, vapors and liquids. Self-cleaning and guaranteed efficiency.

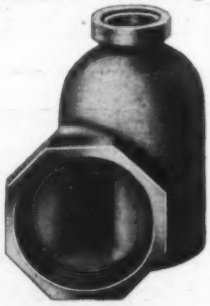
Spray Nozzles

Latest improved, non-clogging.

All pipe sizes

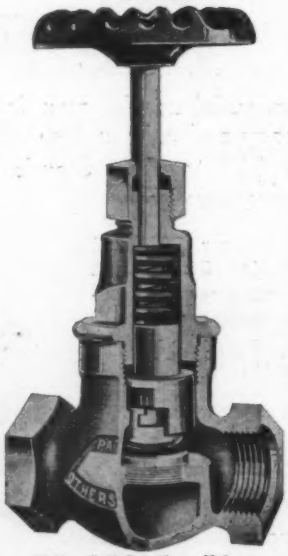
Best cooling, large capacity

Complete equipment for spray ponds



ARMSTRONG STEAM TRAPS

Cannot Waste Steam.
Inlet on Bottom.
Non Air Binding.
Self-Scrubbing
Large Capacity.
Small in Size.
Cheap in Price.
DALLAS STOCK.



Kelly Self-Grinding Valves
Renewable monel seat and bronze disc. Dallas Stock

Vulcan Soot Cleaners
Instant Water Heaters
Superheaters for R. T. Boilers

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Reducing and Regulating Valves, Relief Valves and Strainers

ECKENROTH Semi-Steel Automatic Re-Seating Blow-Off Valves can be repacked and reground under pressure—Improves with use. Wears in, while others wear out.

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TYCOS Temperature Recording, Controlling, Indicating and Testing Instruments

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Drop Forged Steel Valves

FRAMANCO
Drop Forged Steel Unions, Ells, Tees and Couplings

Forged Steel Flanges. All Sizes

Agents for Halyburton Gate Valves, Pilot Regulating and Reducing Valves.

Maintenance Engineering Corporation

1802 Conti St. P-5580
Houston, Texas

RECENT REFINERY PATENTS

BY STAFF REPRESENTATIVE

Washington, D. C.—The following patents of interest to the refining industry were granted by the United States Patent Office during the month of March:

No. 1,574,935 granted March 2 to Daniel Pyzel, Piedmont, Calif., assignor to Simplex Refining Company, San Francisco, for a pressure still for oil refining comprising a furnace, a container in said furnace, and an indicating thermometer embedded in but projecting through only one surface of the wall of said container.

No. 1,575,031, granted March 2 to John E. Bell, Brooklyn, N. Y., assignor to Sinclair Refining Company, Chicago, for a process of cracking heavier hydrocarbons under pressure, which comprises subjecting the hydrocarbons to a cracking temperature under pressure, subjecting the resulting vapors to a regulated condensation while under pressure, permitting uncondensed vapors to escape through a fixed orifice, and increasing and decreasing the condensation in the said regulation condensation with increase and decrease, respectively, of the pressure.

No. 1,575,033, granted March 2 to James Bown, Death Valley, Calif., for an oil storage tank including an oil surface plate, means to position the plate from the sides of said tank, means for holding the surface plates spaced from the side walls of the tank, and means controllable in case of fire to close the gap between said plates and said walls.

No. 1,575,259, granted March 2 to James P. Fisher, Bartlesville, Okla., assignor to Doherty Research Company, New York, for a combined pipe connection and orifice-disk housing, consisting of an orifice plate, a housing for the plate, constructed to connect two adjacent pipe sections, the said housing comprising a pair of flanges spaced apart by a distance such as to permit the orifice plate to be inserted between them, and means for forming fluid-tight joints between the plate and the housing comprising a packing ring mounted on one of the flanges, a retaining ring surrounding the packing ring, and means for moving the retaining ring into close engagement with the orifice plate to provide support for the packing ring adjacent to the plate.

No. 1,575,269, granted March 2 to Edward W. Isom, Winnetka, Ill., and John E. Bell, Brooklyn, N. Y., assignors to Sinclair Refining Company, Chicago, for an apparatus for cooling and condensing mixtures of hydrocarbon vapors and gases, including a tank, cooling coils arranged therein, means for maintaining a substantially constant liquid level in the tank, nozzles arranged to discharge into the lower part of the tank below the normal liquid level and thoroughly to agitate liquid in the tank and connections for introducing the mixture of hydrocarbon vapors and gases to be cooled and condensed to said nozzles.

No. 1,575,663, granted March 9 to Frank C. Vande Water and Frederick R. Sunderman, Newburgh, N. Y., assignors to Petroleum Laboratories, Inc., Newburgh, N. Y., for an apparatus for treating oil, including a still body having a dome, a supplemental chamber within the dome having a series of diametrically opposed openings therein, one set of opposed openings being connected to a gas supply, the other set of openings communicating with the still body.

No. 1,575,905, granted March 9 to Gustav Egloff, Independence, Kansas, assignor to Universal Oil Products Company, Chicago, for a process of blending and purifying light gasoline-like hydrocarbons contained in uncondensable gas with a heavier absorbing oil consisting in mixing the two and simultaneously purifying them by pass-

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ing them through a solution of a base of caustic soda and litharge.

No. 1,575,919, granted March 9 to George Henry Hurshman, Graybull, Wyo., for a still comprising a body portion, a bottom, means for supporting the bottom while leaving it free to expand and contract, and expansible and contractible means connecting the bottom and the body portion.

No. 1,576,005, granted March 9 to Walter Schrauth, Rosslau, Germany, for a process of decomposing fats, oils or waxes by means of sulphoacids which consists in mixing sulphoacid of aromatic hydrocarbons substituted in the nucleus by one hydrocarbon radicle with the fat to be decomposed and water and heating the mixture so long to the temperature at which the splitting of the fats into fatty acids and glycerine is effected, that the desired degree of splitting of the fat is obtained.

No. 1,576,401, granted March 9 to John E. Bell, Brooklyn, N. Y., assignor to Sinclair Refining Company, Chicago for a process of fractional distillation and condensation of oil which comprises flowing the oil to be treated through a series of stills maintained at successively higher vaporizing temperature, condensing part of the vapors given off in each still by absorbing heat therefrom by the oil in a still lower temperature and heating the oil in intermediate successive stills by the condensed vapors from stills later in the series.

No. 1,576,563, granted March 16 to Frank E. Wellman, Kansas City, Kans., assignor to the Kansas City Gasoline Company, Kansas City, Kansas, for a heating system for oil stills consisting of the combination of a vertical still, a furnace setting enclosing the same with an annular combustion space between the two, a stack adapted to receive products of combustion from the upper part of said space, means to produce localized combustion of fuel in the lower part of said space and means to constantly change the point of application of the resultant flame to the still wall.

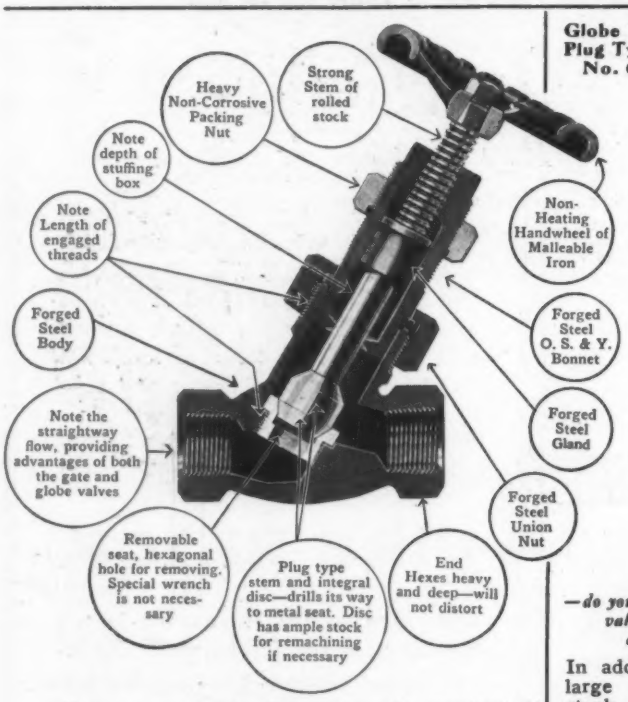
No. 1,576,564, granted March 16 to Frank E. Wellman, Kansas City, Kans., assignor to the Kansas City Gasoline Company, Kansas City, Kansas, for a system for the treatment of hydrocarbon oil comprising a cracking still, a fractionator, a vapor line therebetween, a supplemental still, a down pipe from said fractionator to said supplemental still, a second fractionator extending alongside first fractionator and connected to said supplemental still, a condenser, vapor line connections from both said fractionators to said condenser, a return pipe from the supplemental still to the cracking still, and a feed pipe connected to the first named fractionator for introducing fresh oil in the system through said fractionator and said supplemental still.

No. 1,576,742, granted March 16 to William Tee Hancock and Murat Boyle, Kansas City, Mo., for an apparatus for refining oils, comprising the combination with a horizontal still having perforated pipes running longitudinally thereof, crown sheets supporting the ends of the pipes, the crown sheets being spaced from the ends of the still to provide steam spaces at the respective ends thereof, steam inlets at the respective ends of the still, a separator chamber connected to the upper portion of the still, and a condenser connected to the top of the separating chamber.

No. 1,576,787, granted March 16 to George L. Reichhelm, New York, assignor to the Gasifier Company, Elizabeth, N. J., for a method of producing gas from hydrocarbon fuel consisting in vaporizing the fuel and causing a gravitational movement in a constantly changing direction, free of abrupt bends, of said vaporized fuel in and by a vehicle of combustion gas while said vaporizing is being accomplished to prevent the deposit of carbon.

No. 1,577,200, granted March 16 to Clyde L. Voress, Charleston, W. Va.; Vernon C. Canter, Tulsa, Okla., and Robert W. Skoog, Charleston, W. Va., assignors to Gasoline Recovery Corporation of Delaware, for an absorption apparatus consisting of a horizontally disposed drum having an apertured disseminator arranged in the lower portion of the same near the bottom and extending along the lower part of the drum for substantially the entire length of the latter, a mechanical support in the drum rigidly secured to the latter slightly above the said disseminator, substantially stationary solid absorbent materials carried by the support, a

Edward Forged Steel Valves



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second mechanical support between the absorbent material and first mentioned support and having openings sufficiently small to prevent particles of the solid absorbent material from passing there through, and a second apertured disseminator extending along the support portion of the drum above the solid absorbent.

No. 1,577,410, granted March 16 to Lloyd Raymond Smith, Milwaukee, assignor to A. O. Smith Corp., Milwaukee, for the manufacture of oil-refining stills of extreme dimensions by electric welding, comprising the steps of converting thick plates having a length many times their width into longitudinal trough-like sections with edges reduced in thickness to form a welding groove, assembling such sections in circular order with their edges in register, and fusing the said edges by playing an electric arc in the welding groove to constitute an integral tubular structure without circumferential joints.

No. 1,577,440, granted March 23 to Willard C. Averill, Jr., Houston, Texas, for a method of obtained light hydrocarbons from hydrocarbon oils containing water, which comprising vaporizing the oil to be treated, partially condensing the hydrocarbon vapors and simultaneously condensing the water vapors, subjecting the remaining vapors thereof to previously condensed hydrocarbons of higher boiling point obtained from said vapors, which latter are supplied by removing the water collected from the condensed vapors, and continuousy circulating through said vapors the hydrocarbons thus obtained.

No. 1,577,723, granted March 23 to Edward M. Hughes, Chester, Pa., assignor to Sun Oil Company, Philadelphia, for a process of making cutting oil exclusively from mineral oil which comprises distilling from crude petroleum a relatively heavy distillate adapted for lubricating oil stock, treating the same with a mineral acid, drawing off the precipitate, treating the remaining body of acid-containing oil with an alkali, separating out the precipitated emulsion comprising soap, salt water, and some free alkali and unsaponifiable mineral oil, decomposing the soap with a relatively weak solution of a mineral acid, separating out the precipitate of water and salts, saponifying the remaining product, and mixing it with mineral oil, thereby producing a cutting oil which, when mixed with water, forms a milk-white and substantially perfect emulsion.

No. 1,577,852, granted March 23 to Carl Petty, Winfield, Kansas, assignor to the De Laval Separator Co., New York, for a process of separating wax from mineral oil lubricating stock which comprises diluting the stock with a light petroleum distillate, then agitating the diluted stock with an acid, separating out acid sludge, and agitating the acid treated stock with an alkali, then removing the soap and

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water from the stock, then mixing a clarifying and decolorizing agent with the stock and removing said agent with coloring matter, then chilling the stock and then centrifuging the stock to separate the wax, with a proportion of the diluting agent, from the remainder of the diluting agent and oil.

No. 1,577,871, granted March 23 to George L. Prichard and Herbert Henderson, Port Arthur, Texas, assignors to Gulf Refining Co., Pittsburgh, for a process of producing lower boiling hydrocarbon from higher boiling hydrocarbons which comprises distilling a body of higher boiling hydrocarbons in the presence of a catalytic chemical of the nature of aluminum chlorid condensing vapors of higher boiling hydrocarbons and the catalytic chemical, maintaining a second body of higher boiling hydrocarbon and the catalytic chemical undergoing distillation, delivering said condensate to said second body, and delivering for final condensation vapors of lower boiling hydrocarbon produced in the first distillation.

No. 1,577,917, granted March 23 to David G. Lorraine, Los Angeles, for a method of separating gas and oil which consists of trapping a volume of a flow, permitting the lighter constituents to rise therefrom, causing rotary agitation of said separated lighter constituents, and controlling discharge of said separated lighter constituents proportional to the volume of said flow.

Bristol's in the Refinery

For service in connection with the condensers on the stills—where cuts are made all the way up to the fuel oil (the vapor temperature in condensers rising to about 650°F.)—Bristol's Recording Thermometer, Class 111 are chosen. They record temperatures up to 1000° F.—and as low as 60° below zero; utilizing a patent compensator for recording the lower ranges. Operation is by the expansion of a gas.

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No. 1,578,035, granted March 23 to Edward W. Isom, Locust Valley, N. Y., assignor to Sinclair Refining Co., New York, for a method of cracking hydrocarbon oils, which comprises circulating oil in a single pass through a heating conduit, heating the oil circulating through the conduit to a cracking temperature by circulating heating gases thereover in generally concurrent relation with the oil flow, subjecting the vapors of the cracked oil discharged from the conduit to a refluxing operation, supplying reflux from the refluxing operation to the conduit at a point adjacent to the end of the conduit over which the heating gases first circulate, supplying fresh oil to the conduit at an intermediate point, and recirculating over the heating conduit part of the heating gases which have passed thereover in admixture, with fresh heating gases.

No. 1,578,049, granted March 23 to Almer McDuffie McAfee, Port Arthur, Tex., assignor to Gulf Refining Co., Pittsburgh, for a process of distilling higher boiling oils with metallic halides which comprises heating a mixture of a metallic halide and higher boiling oil to distil the same, conducting away vapors of lower boiling oils formed, condensing the vapors of lower boiling oils and intimately contacting the said vapors prior to their condensation with added petroleum hydrocarbon.

No. 1,578,050, granted March 23 to Almer McDuffie McAfee, Port Arthur, Texas, assignor to Gulf Refining Co., Pittsburgh, for a process of distilling which includes, the lowering of the boiling point of petroleum oils by distilling the same in the presence of aluminum chloride, the process which comprises partially cooling the vapors to condense out aluminum chloride and kerosene, separately condensing and collecting vapors of petroleum oils having boiling points below that of kerosene, separating the aluminum chloride from the kerosene by settling, simultaneously returning the aluminum chloride to the still and separately removing the collected kerosene.

Proctor Promoted

E. C. Proctor has been named manager of the Kettle Creek Refining Company at El Dorado, Arkansas, succeeding J. R. Tristler, who has resigned to enter the real estate business in California.

Mr. Proctor has been assistant sales manager at Tulsa of the Imperial Oil Marketing Company, a concern affiliated with the Kettle Creek Company.

R. L. Vernor

R. L. Vernor has moved up another step with the Pure Oil Company, having been transferred to the Marcus Hook plant. Vernor was at the Ardmore plant before going to Smith's Bluff, when Pure Oil built its tidewater plant on the Texas Gulf Coast. He was in charge during construction and remained there until the last transfer.

How to Clean an Engler Distillation Flask

By H. L. Kaufman
Consulting Petroleum Chemist and Lubricating Engineer, Denver, Colorado

SEVERAL months ago the writer had occasion to spend a couple of days in the state laboratory of one of our Middle-Western states, during which time his attention was called to the fact that distillation tests were being run on gasoline and kerosene samples using flasks that had never been cleaned after running a test, and in which the accumulation of carbon on the entire inner portion of the flask was so great that it was impossible to see through any part of the flask except the neck.

Inquiry developed the fact that neither the state inspector nor any of the chemists or assistants working in the laboratory had been able to devise any method by which the flasks could be cleaned completely, and with a minimum expenditure of time and effort. As a result, the chemists and assistants were re-using the flasks without cleaning them after making a test. The state inspector, as well as his chemists, claimed that after running scores of gasoline and kerosene samples using both clean flasks (free from carbon on the inner surface) and dirty flasks (in which much carbon had accumulated), they had been unable to find any appreciable error introduced into their results, and that, on the same sample, using either a clean or a dirty flask, the end-points obtained checked within even less than the 6 degrees F. difference that is considered, according to A. S. T. M. specifications, to be a check result.

Dirt Means Error

However, this is not in accordance with the writer's own experience both in personally making and in supervising the work of others in making Engler distillation tests, for my experience has been that dirty flasks are conducive to a variation in the results; and that, although the variation in the end-point may be either higher or lower than when clean flasks are used, the general tendency (in my personal experience) has been that slightly higher results are obtained. It is not the writer's purpose in this short article to make any effort to explain the reasons for these variations, other than to state that my own experience has indicated that such variations do exist.

Methods for cleaning distillation flasks that have been tried out at different times include the following:

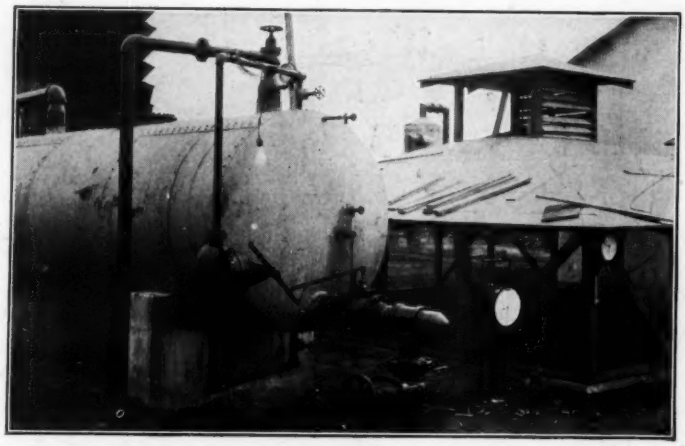
1. Shaking the flask with cleaning solution (made by mixing and heating together powdered potassium dichromate and sulphuric acid) and fine pebbles.
2. Shaking the flask with wet sand to which fine pebbles have been added.
3. Shaking the flask with steel filings.

A Quicker Way

Of the three methods mentioned above, the third proves most satisfactory, but all are objectionable and not entirely satisfactory because of the slowness with which the flasks are thus cleaned, and hence the large amount of time and effort involved.

A method, however, that is simple and requires not over 30 seconds time in cleaning a flask that has been used only one or two times is as follows:

Making a clean swab by taking either



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a ⅛ or 3/16-inch diameter rod (copper, steel, iron or any convenient metal), 12 to 14 inches in length, and bend it at one end in such a way that it will be convenient for holding in the hand. To the opposite end, fasten in place with fine wire a piece of ordinary steel wool, being sure that the wool is wired securely in place and that the end of the rod is heavily padded with the wool. The cleaning swab is now ready for use in cleaning distillation flasks.

First Drained

It has been found that the flasks are cleaned more easily with the swab just described if the flasks have been allowed to drain until fairly dry. Hence the practice followed in the laboratory of Producers and Refiners Corporation at their Parco, Wyoming, refinery (in which laboratory this method of cleaning Engler flasks has been in use for over a year) is to place the flask, after fininshing the distillation, upon a "drain-rack." This rack is merely a board fitted with twelve, vertical pegs of such diameter and height that the flasks will fit conveniently over them. As this drain rack is finished in dark oak to conform with the finishing of the laboratory furniture, it does not appear as an objectionable looking piece of equipment. When the flask has drained, or whenever the tester has a few moments time to do so, a few turns of the swab in the dirty flask will remove the adhering carbon particles, and in less than 30 seconds time the flask is clean and ready for use again.

Regardless of whether or not a dirty flask causes a variation in the end-point when making a distillation test on a sample of any petroleum product, it is a fact that clean flasks and clean-looking equipment are conducive to more reliable results and that when a trained chemist, or possibly even a layman, sees distillation tests being made on a petroleum product using a dirty flask—one distinctly stained with adhering carbon particles—that, regardless of all the pains and care taken in seeing that other details of the procedure are followed in strict accordance with A. S. T. M. specifications, such chemist or layman is very apt to doubt the reliability of the results.

McMan Buys

Desdemona, Texas. — The World Gasoline Company's natural gasoline plant located on the Beardon farm, J. Salinas survey, about two miles west of Desdemona, has been purchased by the McMan Oil and Gas Company of Tulsa. This plant is equipped with three 180 H. P. Bessemer engines, and is producing about 2750 gallons of absorption gasoline daily. The new owners have announced that some minor changes will be made in the operating equipment.

What Insulation Means to the Refiner

(Continued from page 46.)

will last. And yet I find, in going through our refineries, that much of the insulation is in bad condition. Patches of insulation are falling from our stills; the cold lines are frosted or wet; the steam covering is sagging, etc., and yet when I specified these materials several years back I thought I was getting the best to be had. I find this condition true of the insulation purchased from all companies—not any one make in particular, but insulation as a whole. Is is possible that your industry is so far behind that you cannot devise materials and methods of erection which will give better results?"

Finding Troubles

An investigation of such conditions will usually disclose several basic reasons why the insulation is not holding up.

In some cases we find that the insulation manufacturer had not provided a secure method of holding his insulation to the equipment; or, if he did, that the refinery erection crew devised a methed of their own instead of using the original specifications. Recently, insulation, weighing about 500 pounds, fell from the head of a pressure still in operation. This weight struck directly in the 1½-inch tar line between the valve and the still. As the still had been operated for several years there was danger of the tar line breaking from such an impact. Investigation showed the insulation had been supported merely by wires fastened to a cable attached to the still. Continued heat had expanded and weakened the cable, and several of the wires had rusted through, allowing the insulation to fall. The insulation material itself was in good condition and would have performed its required work efficiently for years to come. The accident was due entirely to an incorrect method of application. There were twenty stills in this battery. Imagine, gentlemen, the consequences if this tar line on an operating pressure still had broken. How long do you suppose it took that superintendent to go over all of his still heads and see that the insulation was held securely by a more permanent band and angle method?

Frequently the insulation is specified or purchased by a central engineering department. When it arrives on the job, the men in charge sometimes take the attitude that the proper installation and use of the materials is up to the man who ordered them and they refuse to ake any responsibility for it, or very much interest in how it is done.

Then again, the mechanical superintendent, who is usually responsible for insulation erection, and his principal assistants are usually interested in the new operation only until the pipes have been all connected and a pressure test shows the job to be sound. Insulation to them is a necessary evil which must be added later, but the big job is done and their attention is directed to some other new project. As a result, the insulation may be slighted to the serious detriment of the finished job.

Too Many Languages

Again I have found the insulation crew in one of our largest refinereies to consist of one American foreman who could not read a blueprint, an Austrian sub-foreman who had difficulty in understanding English, and a regular crew of Austrians who understood even less. This force is augmented on big jobs by yard men and laborers who are mostly Americans, yet who, because of their inexperience in this kind of work, must necessarily work for the foreigners. You can readily picture what kind of workmanship results from this combination.

The remedy for these conditions lies with both the manufacturer and the refiner. It is the manufacturer's business first to devise a permanent and secure method of installation and then to see that complete and detailed instructions are furnished in all cases where the insulation is to be applied by the refinery employees. It is the refiner's business to see that the work is placed in charge of intelligent and competent foremen who can and will follow instructions and who can be made to understand the vital importance of careful erection.

In all cases where enough of this kind of work is being done, as it is in most refineries, a competent crew should be trained to handle insulation and all work of this kind should be done by them. In case insulation is only an occasional job, or insufficient to justify a regular crew, the best solution is a contract with the insulation manufacturer for the erection of the insulation, or, for the services of one of his competent erection superintendents.

Either method will usually insure careful workmanship and a substantial, correctly applied job.

(3) Effective maintenance of the insulation after it is erected:

It is evident from the trend of my argument that if you pay careful attention to the first two factors, namely, the selection of the proper material and the erection of this material in a substantial manner, the matter of maintenance will be very simple. If these two conditions have been fulfilled, proper maintenance means little more than a regular inspection of all insulation around the refinery, similar to your standard fire inspections. This will give you an opportunity to keep the insulation always in good shape. Your repairs will be small if made at once before any serious trouble develops. The inspector will see that all supporting devices are tight and in place; that all cold insulation is kept air-proof by regular painting; and that the weather proofing on all insulation

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exposed to outside conditions is kept intact.

A frequent source of trouble comes at points where equipment repairs are made. The insulation may be removed, not by the insulation gang, but by pipefitters, welders, boilermakers or others making repairs who seldom give any thought to its replacement. In many cases, the insulation foreman does not know that the insulation has been removed, and by the time he gets around to replace it, enough trouble has been caused to make the job a good deal bigger and the cost of satisfactory repairs far higher than they would have been if the work had been properly planned and taken care of in time.

So far in this discussion we have not mentioned one of the factors that too frequently determines the choice of insulation, that is, its cost. A paper could be written on this subject alone. The real cost on an insulation job is not the material cost plus the erection cost, but is the final cost of the job for the life of the equipment, and it necessarily includes all of the points so far discussed. If a buyer saves several thousand dollars by accepting one material and erection specification over another on a $50,000 order, this saving at the time is noticed by his superiors. But the engineering service, repairs, and maintenance come under another account and usually are absorbed in the general refinery overhead, so that the buyer, and his superiors, may never know that, ultimately, this job has actually cost several thousand dollars more. The acceptance of another proposal with a higher first cost but far lower service and maintenance cost would have saved money in the end, often a great deal of money. Subsequent costs are just as much an element of final cost as is the initial price of the material and erection.

I have mentiontd the matter of comparative tests on different insulations. In my experience I find the insulation manufacturers always ready to cooperate with a refiner when large-scale practical tests are suggested.

Invariably, we are told that under the conditions of operation, it is impossible to obtain comparative results or that the life of the test would be so long that the cost of obtaining the data would not warrant the result. Then, at times, we find that where tests were started, a change in personnel or other conditions brought about a loss of interest and a discontinuance of the tests.

One Busy Man

On the other hand, I know of one chief engineer, who is responsible for seven refineries and other auxiliary equipment. He is recognized as a man who knows his job thoroughly. Let me tell you how he gets by.

His office is at one of the largest refineries under his supervision. Any salesman with some new idea or new equipment is sure of a fair and

courteous hearing. If the idea looks good, a small order is placed and the equipment is installed in the refinery. Every Sunday morning at 7:00 o'clock this engineer meets the refinery mechanical superintendent at the plant and with a list of all tests, they go over the refinery with a fine-tooth comb. If in the course of time the device or equipment proves satisfactory, it is adopted for all the refineries. Do you wonder that this man is recognized by one of the larger Standard Oil Company units as their most capable engineer? His ideas are adopted without question by the parent organization.

What provision have you in your refinery? Do you have some such practical method worked out for testing not only insulation, but other new ideas presented to you?

Returning now to the title of this paper—"What Does Insulation Mean to the Refiner," I think you will admit if your insulation is not performing as you expected it to at the time you authorized its purchase, that the fault can very likely be traced to some one or more of the conditions pointed out.

Just one more point—In a discussion of insulation, a certain engineer remarked that insulation salesmen took up too much of his time. He stated that he could buy $100,000.00 worth of steel much easier than $10,000.00 worth of insulation; and if he did not like the salesman personally, he would delegate the purchase of insulation to one of the youngest engineers on his staff. Of course, this man is an exception, but his attitude does indicate a certain tendency to slight the importance of insulation, which is more typical of the past than of the present. Just as in every other industry, insulation is coming to play a larger and larger part in plant economy and efficiency, so the refinery engineer who finds himself constantly under the necessity of improving processes and reducing costs is looking to insulation to help him out. He will not be disappointed, and I am here to assure you, gentlemen, that my own company, and I feel that I can speak with equal confidence for the whole industry, stands ready at all times to cooperate with you to the fullest extent in the solution of those problems in which we are mutually interested.

I have not attempted in this very general talk to describe any specific type of insulation for refinery use. To do so would take more time than I feel I have at my disposal.

I trust, gentlemen, that I have succeeded to some extent in making one thing at least clear to you—that the insulation industry is by no means ignorant of your problems or indifferent to them. On the contrary, we are very well informed and keenly alive to the situation. Also we are already prepared with materials and methods which can be depended upon to give maximum results in the case of most of your requirements. For others,

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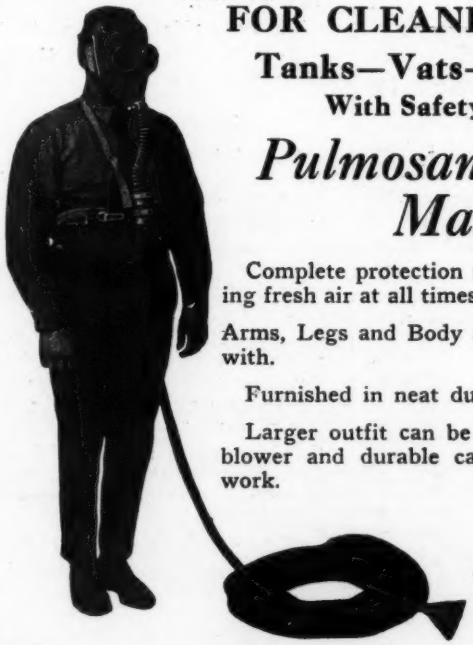

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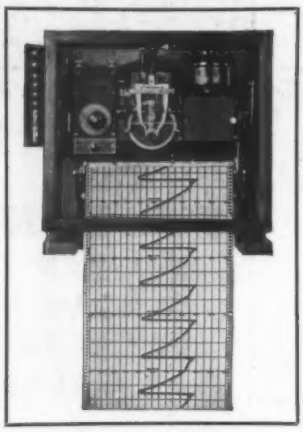

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Sharpe, Musser et al

With the promotion of R. J. Sharpe to general sales manager of the General American Tank Car Corporation, one of the Mid-Continent's widely known sales teams has been broken up.

The first break came when Ralph Musser was transferred from Dallas to California territory. During the period commonly know as "boom days," Musser at Dallas and Sharpe at Tulsa comprised a pair of sales executives, sales engineers, sales directors, or just plain salesmen, however it may be that G. A. T. X. designates its men, than which none were better known.

With the Texas territory surrendered by Musser, Sharpe had increased scope. Now Box Sharpe is to become general sales manager of the concern, with headquarters in Chicago. He will leave Tulsa shortly.

But the concern has already put its Mid-Continent territory in competent hands. Even before the Sharpe announcement was made, T. C. Moss of Dallas had been made sales executive for the North Texas territory. Moss is an old running mate of Musser's. He comes to the business of selling and leasing tank cars, as well as whatever other duties a tank car salesman may have, from that of selling petroleum products.

The Tulsa office will be put in charge of J. V. O'Neil, who will come from Chicago.

Victor H. Smith

Around El Dorado, Arkansas, they are going to miss Victor H. Smith. He had a way of going about matters in effective fashion when matters needed attention. This applied in particular to matters that belonged to the petroleum field, while he gave no little attention to civic matters.

Victor H. Smith has resigned as vice-president of the Lion Oil Refining Company to become vice-president of the North American Car Company.

Before joining the Lion Company, Smith was with the Imperial Oil Refining Company at Ardmore. Previously he had spent several years in railroad work.

So he goes with the North American Car Company doubly equipped. He knows railroading and he knows the oil industry.

The North American Car Corporation was organized by Henry H. Bingham of Chicago and began functioning in 1907. It has enjoyed rapid growth, a big share of its business being confined to furnishing means for transporting crude oil and refined products by rail.

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Traffic Matters to Demand Attention at N. P. A. Session

(Continued from page 22.)

Marshals of The National Petroleum Association.

7:30 P. M. Fellowship Supper, Fred G. Clark, in charge of entertainment.

Friday Morning, April 16

B. B. Stroud, presiding.

10:00 A. M. General Subject: Manufacture. The Petroleum Refinery—Present and Future. Charles L. Parmlee, Consulting Engineer.

The Work of the Department of Manufacture.

(a) The Program of the Department.
(b) Boiler House Practice.
(c) Saving Steam.
B. B. Stroud.

Discussion.

12:30 P. M. Adjournment for lunch.

Friday Afternoon, April 16

E. M. Lyons, presiding.

2:00 P. M. General Subject: What Refiners Ought to Know.

The Work of the Department of Trade and Commerce.

(a) Functions of the Association's local Trade Groups.
(b) The Association's Plan for Credit Information.
E. M. Lyons, Trustee in Charge, Department of Trade and Commerce.

What Domestic Oil Burning Will Mean to the Refiners. Leod D. Becker, Executive Secretary, American Oil Burner Association.

The Association's Testing Methods: Presentation of Pamphlet, Fred G. Clark, Trustee in Charge, Department of Standards and Tests.

Discussion.

The Association's Finances. G. B. Hunter, Treasurer.

The Association's Membership, H. A. Logan, Trustee in Charge, Department of Membership and Relations.

Memorial Tribute to Col. U. G. Lyons.

New or unfinished business.

The trustees will meet immediately after the close of the meeting.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912.

Of THE REFINER AND NATURAL GASOLINE MANUFACTURER, published monthly at Houston, Texas for April 1st, 1926.

State of Texas
County of Harris ss.

Before me, a Notary Public in and for the State and county aforesaid, personally appeared A. L. Burns, who, having been duly sworn according to law, deposes and says that he is the Manager of The OIL WEEKLY and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher, R. L. Dudley, 1716 Dallas Ave., Houston, Texas; Editor, Grady Triplett, 215 Atco B'dg., Tulsa, Okla.; Associate Editor, S. W. Robinson, 1716 Dallas Ave., Houston, Texas; Manager, A. L. Burns, 1716 Dallas Ave., Houston, Texas.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.)

James Anderson, Houston, Texas. D. L. Blaffer, Houston, Texas. Mrs. S. C. Blaffer, Houston, Texas. A. L. Burns, Houston, Texas. J. F. Carter, Tulsa, Okla. Dr. N. L. Dudley, Goose Creek, Texas. R. L. Dudley, Houston, Texas. W. S. Farish, Houston, Texas. Dr. J. L. Gross, Houston, Texas. H. R. Hughes Estate, Houston, Texas. Chas. H. Lane, Houston, Texas. W. B. Larkin, Wichita Falls, Texas. J. H. McEvoy, Houston, Texas. J. H. McEvoy, Jr., Houston, Texas. H. A. Miles, Dallas, Texas. Wallace E. Pratt, Houston, Texas. J. Kent Ridley, Houston, Texas. Spencer W. Robinson, Houston, Texas. C. N. Scott, Houston, Texas. R. S. Sterling, Houston, Texas. John R. Suman, Houston, Texas. O. R. Waller, Chicago, Ill. E. E. Watts, Houston, Texas. C. F. Williams, Humble, Texas.

3. That the known bondholders, mortgagees, and security holders owning or holding 1 per cent or more of total amount of bonds, mortages, or other securities are: (If there are none, so state.) Maurice Hirsch, Houston, Texas. Jas. Anderson, Houston, Texas. H. C. Weiss, Houston, Texas. R. L. Blaffer, Houston, Texas. W. S. Farish, Houston, Texas. Chas. H. Lane, Houston, Texas. Jno. R. Suman, Houston, Texas. Mrs. Chas. H. Lane, Houston, Texas. Mrs. A. C. Schneider, Houston, Texas. R. S. Sterling, Houston, Texas.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the six months preceding the date shown above is..... (This information is required from daily publications only.)

A. L. BURNS,
Manager.

Sworn to and subscribed before me this 31st day of March, 1926.

J. KENT RIDLEY,
(SEAL.) Notary.
(My commission expires June 30th, 1927.)

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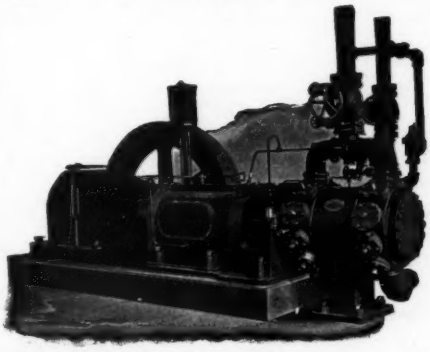

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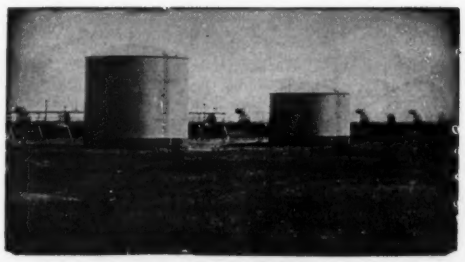

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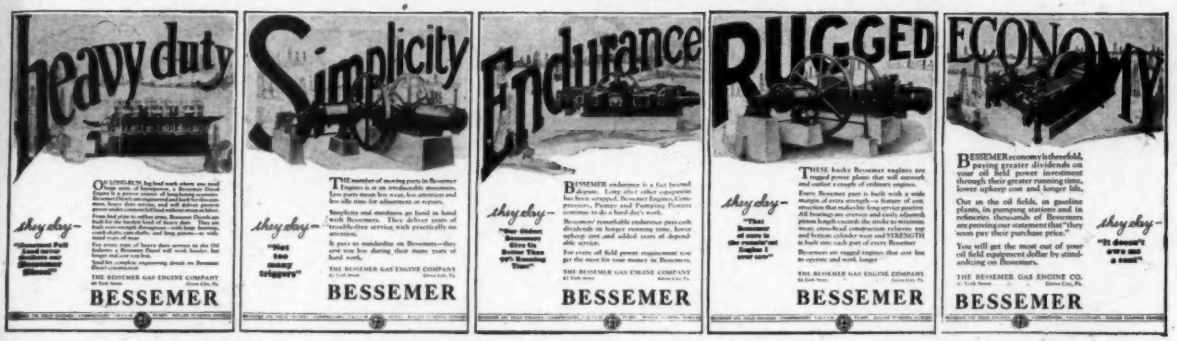

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